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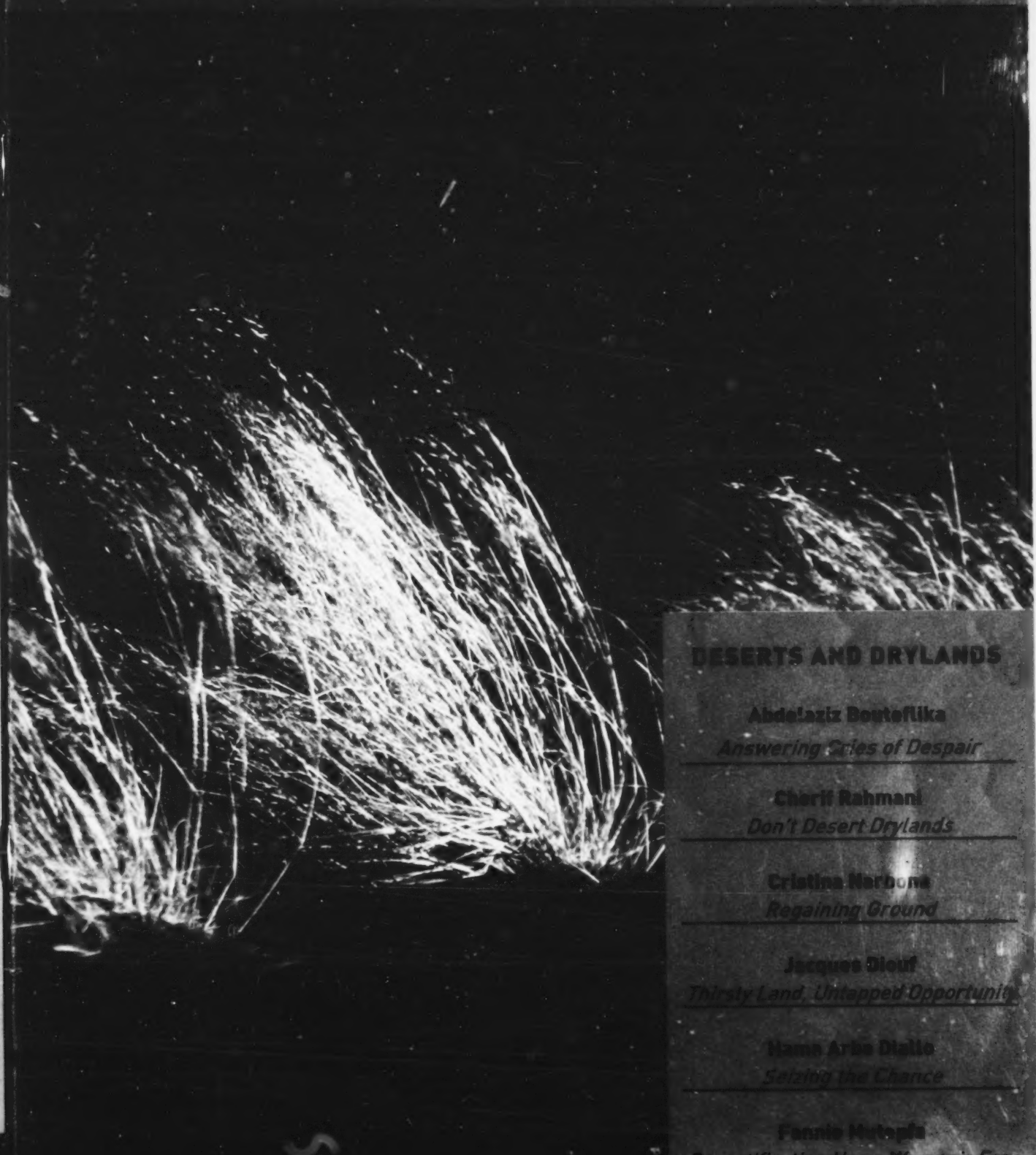

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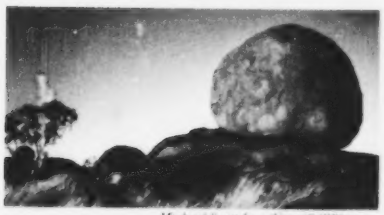

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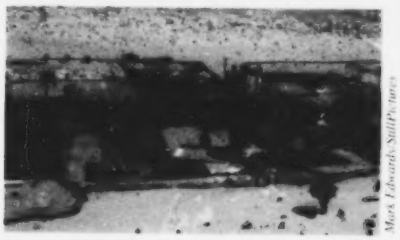

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UNEP

From the desk of

SHAFQAT KAKAKHEL

Deputy Executive Director and Officer in Charge of UNEP

The world's deserts, covering a fifth of its land surface, conjure up many emotions, many contradictory ideas. Hardship and romance, bareness and awe-inspiring beauty.

The driest places on Earth, they are home to 350 million people and some of the rarest and most curious species known. Culturally and spiritually they stand in the centre of at least two of the great religions. The desert was the backdrop to the life and teachings of the Prophet Muhammed, while Jesus was tempted by the Devil in one such wilderness.

Climate change

For some, deserts mean black gold: half the world's oil comes from them and three – quarters of oil reserves lie beneath their sands. For others they offer the opportunity of a low carbon, or even carbon-free, world, controlling climate change: makers of solar thermal power plants claim there is enough solar radiation hitting just one per cent of their surface to meet the whole world's needs.

Desert ecosystems support the growing understanding that the environment is not a luxury, but a key factor in overcoming poverty and an economic basis for livelihoods, true sustainable development.

Their often harsh and arid conditions have spawned animals and plants uniquely adapted to them. Flora in a variety of fantastical forms – sometimes able to lie dormant for years – burst, like the fabled phoenix, into short-lived but highly productive life after rain.

Such super-fast growth and massive seed production – so essential for survival – has made many dryland plants the basis of agricultural societies. Wheat and barley evolved from desert annuals in the Near- East some 7,000-9,000 years in the past, as did maize and squash in southern Mexico around six millennia ago. Experts believe other food crops are waiting to be discovered in these unique natural laboratories.

Chemicals and pharmaceuticals, derived from micro-algae and medicinal plants that thrive in the year-round high solar radiation, are emerging onto global markets. Many scientists suspect that, given the unique evolutionary history of many desert plants, their real pharmaceutical potential has yet to be realized.

Deserts are even being used for fish farms. Shrimp are being grown in the high temperatures of the Arizona desert in the United States. And pilot projects in India's desert state of Rajasthan have found its saline water – which hinders crop growth – ideal for the purpose.

Desert romance

The romance of the desert – fueled by such classic literature as the Thousand and One Nights or Arabian Nights and films like Lawrence of Arabia – increasingly attracts tourists. Tourism can be a damaging extractive industry, consuming and subsuming the environment and cultures it visits. But sensitively managed, it can deliver sustainable livelihoods and a new generation of fans of the desert world.

These are among the findings of UNEP's Global Deserts Outlook being launched on this year's World Environment Day to mark the UN International Year of Deserts and Desertification. This year's slogan for the Day is 'Don't Desert Drylands' and the main celebrations are in Algeria.

Desertification is one of the hardest and most intractable environmental problems. Thirty-six countries are affected by it, or by land degradation, in Africa alone, and an estimated 75 per cent of the continent's farmland is rapidly losing the basic nutrients needed to grow crops. Some estimate the cost of this loss – in some of the poorest countries on Earth – as $4 billion a year.

Traditional wisdom

Poverty is a primary driving force behind the process. It forces many farmers to cultivate marginal land continuously, without fallow periods, thus crippling it. We must urgently break this cycle by offering alternative livelihoods and regaining traditional land management and wisdom – and through direct measures like promoting agroforestry and harnessing the abilities of earthworms, beetles, fungi, bacteria, and other organisms to boost the fertility of the soil.

Otherwise the desert margins – where the drylands and the desert lands meet – will continue to witness an unsustainable battle, with tragic long-term consequences for both their ecosystems and their peoples ■

YOUR VIEWS

We would like to receive your feedback on the issues raised on this edition of ***Our Planet****. Please either e-mail: uneppub@unep.org or write to:*
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Answering Cries

of Despair

ABDELAZIZ BOUTEFLIKA on World Environment Day calls for a charter on deserts and desertification

Algeria is greatly honoured to have been chosen by the United Nations Environment Programme to host the 2006 World Environment Day celebrations. We are particularly proud to have been chosen, as this year's focus is on deserts and desertification.

The official slogan for WED 2006, 'Don't Desert Drylands', addresses sustainable development in the deserts. In order to respond to the concerns and expectations of many countries on this issue, the UN General Assembly adopted, at Algeria's instigation, Resolution 58/211, which established 2006 as the International Year of Deserts and Desertification.

Natural disasters

Through its dual role as host country of World Environment Day and as the official 'voice' for the 2006 International Year of Deserts and Desertification, Algeria is receiving international acknowledgement for its efforts towards environmental protection and balanced and sustainable development, as well as its wide and varied activities aimed at protecting the environment. Algeria is keen to establish an international, innovative and sincere partnership, based on the principles of fairness, solidarity and common responsibility.

My country is delighted to host WED 2006 on the African continent, large sections of which are covered by deserts and drylands, making it the most affected by and most vulnerable to the devastating consequences of the alarming degradation of fertile soils. Persistent and cyclical droughts, frequent natural disasters, poverty, migration, and other dramatic aspects of underdevelopment have had numerous consequences that cannot be confined to narrow national and regional contexts and spaces because they go beyond the political and natural borders of nation states. These numerous consequences have in fact been underlined on many occasions by the Secretary-General of the United Nations, Kofi Annan.

Combating desertification

The New Partnership for Africa's Development (NEPAD) – a unique and innovative African initiative of which Algeria is one of the key instigators – is, without a doubt, a resolute and responsible response to the major challenges that the continent faces today. With a wealth of natural and human potential, often little or badly used, Africa must face the challenges of globalisation, especially those related to better governance and steady and sustainable development, the principal pillar of which is the environmental dimension. Combating desertification, conservation – and the integrated and rational development of arid, semiarid, mountainous and forest areas, preserving water resources and reducing poverty are therefore key objectives that must be quickly addressed, in order to put an end to the devastating impacts of underdevelopment on the continent.

On the occasion of World Environment Day, the international community is called upon to reflect on the possibility of forging a sustainable partnership, responsible and innovative, which should be able to contribute effectively to the success of this exemplary African initiative in Eco-Development. In so doing, it will be answering the cries of despair, the aspirations and expectations of nations and peoples who must cruelly ▶

endure daily hardship and an uncertain future. We must face up to the fact that the sometimes irreversible degradation of cultural, natural and agricultural heritage, of fragile ecosystems and biodiversity, the rapid spread of deserts, as well as inadequate international response and local efforts to combat desertification, aggravate conditions of poverty across the world, deepening the crisis on a global scale.

In 2005 in San Francisco, under the slogan 'Green Cities: Plant for the Planet', we were invited to adopt accords for the creation of a network of cities striving for a sustainable Urban Environment. This year, we call for the adoption of a World Charter on Deserts and to Combat Desertification to mark World Environment Day and the closing of the International Year of Deserts and Desertification. In this way, we hope to contribute to achieving some of the Millennium Development Goals, goals which were reinforced and renewed by the decisions made by Heads of State and Government during the World Summit held in New York in September 2005.

All our efforts aim to sustainably reinforce our common efforts towards the development of human rights, a healthy environment, a decent and fulfilled life and a global, real, and sustainable development, for all. It is therefore our duty to unite and consolidate our efforts and means and to make them work for our common conviction, that of a common future, for the generations of today and tomorrow and for their legitimate right to live on a protected and safe planet.

Let this World Environment Day be an opportunity for us all to be messengers of world peace and harmony, messengers of hope for the future – that of our children and that of our planet ■

H.E. Abdelaziz Bouteflika is President of the Democratic and Popular Republic of Algeria.

Cherif Rahmani: Don't Desert Drylands

This slogan, in the form of an urgent call to action, defines the context in which World Environment Day 2006 will be celebrated. Algeria, my country, is honoured to have been chosen by the United Nations Environment Programme (UNEP) as host of this day. Algeria is doubly honoured, first and foremost because the majority of its territory comprises desert and also because, by choosing Algeria, it is the whole of Africa that is honoured.

This year, the theme builds on Resolution 58/211 under which the General Assembly of the United Nations proclaimed 2006 International Year of Deserts and Desertification. This decision represents a welcome outcome of the multifaceted steps taken by my country on deserts, initiated and developed for many years, but that has certainly experienced a revival since the year 2000.

Many efforts, many initiatives and many plans of action have thus been successful. Algeria has committed itself, resolutely and consistently, to policies that not only mobilize but unify as well. Under the innovative environmental policies initiated by His Excellency Abdelaziz Bouteflika, President of the Republic, we have developed and conclusively and visibly expanded on the commitments made during the Summits on the Environment and Sustainable Development of Rio then Johannesburg, as well as the UN's Summit on the Millennium Development Goals. We have also tried, and often succeeded, at our level, to encourage partnerships and mediums of cooperation and dialogue at a regional and international level, while always ensuring that our approach respected common principles, such as those pertaining to "shared but differentiated responsibility". Should one not therefore, consider that by choosing Algeria as the focal point for the celebrations in 2006, the aspirations and very valid expectations awakened by the UN Resolution declaring this the International Year of Deserts and Desertification to have been consecrated?

It is in any case justifiable that we once again declare ourselves honoured by this selection, in as much as the Resolution was adopted following the initiative taken by my country and that of the Fondation Déserts du Monde created under the patronage of H. E. Abdelaziz Bouteflika.

I have the pleasure and the privilege to reaffirm here, in my capacity of Ambassador, Honorary Spokesperson of the UN for the 2006 commemoration, how seriously we take the demands of the mission we have been given.

We must first give back hope to the millions of people in drylands. Hope alone, however, can not satisfy expectations when survival is often the prime issue. We not only feel concern at the often chronic material poverty in which entire communities are sinking in desert and semidesert regions.

Their poverty is, in our view, the supreme issue. And it is there that we draw on the reasons for our actions and our commitment. Algeria will host a high level meeting at the end of the year, in the context of the International Year on Deserts and Desertification. The meeting will take stock of all that was warmly and generously thought of and retained concerning deserts and its people. This will be the crowning achievement, not only suggested but also programmed, of a series of actions throughout the months that make up this symbolic year. The fight against desertification is an unending one. The fight against poverty is an imperative one, which now categorically forces itself upon us.

So what territory in reality is touched by our action? It is obviously the planet as a whole. For, if deserts only appear here and there in man's view, the heart of human sensitivity, on the other hand, resides everywhere.

We must speak up everywhere in favour of the deserts and the populations that inhabit them and that have formed such extraordinary civilizations, such extraordinary cultures!

We must sensitize man everywhere because where man's heart and spirit are conquered, they put themselves at the service of the causes that have moved them positively.

Let us always remember that we are at the service of one slogan: Don't desert drylands! Because that slogan puts us at the service of those who, though possibly unaware of our efforts, nonetheless and paradoxically, expect much from us ■

H. E. Cherif Rahmani is Minister of Environment of Algeria. He is also President of the Foundation 'Deserts du Monde' and Honorary Spokesperson of the UN International Year of Deserts and Desertification.

Luiz Rubio/StillPictures

Regaining *Ground*

CRISTINA NARBONA describes a developed country's experience of desertification and the measures it has taken to combat the problem

As a developed country affected by desertification, Spain has been at the forefront of the struggle against it for well over a hundred years. It started restoring degraded land areas in the second half of the nineteenth century. Since then a tenth of the country – some five million hectares of land – are estimated to have been reforested to protect soils and regulate the water cycle.

Spain was the first industrialised country to act on the recommendations of the 1977 Nairobi Conference on Desertification, drawing up the Programme of Action for the Mediterranean Shore the following year. Three years later it started implementing the United Nations Action Plan to Combat Desertification through its LUCDEME Project, which still continues. It then took an active part in negotiating the Convention to Combat Desertification (UNCCD) and its annex on implementing it in the Northern Mediterranean.

It made a detailed diagnosis of desertification in the country through its National Action Programme on Desertification (NAPD), analysing interactions with strategic planning structures. This demonstrated the coherence between the principles and actions proposed in the NAPD and such sectoral plans as: the Spanish Forestry Plan and regional forestry planning; the National Water Plan and Water Basin Plans; the programmes of regional and rural development; and the National Irrigation Plan. The Convention's principles have also been integrated into agro-environmental requirements for receiving aid under the Common Agrarian Policy, a new Law on Mountains, planning orders to rehabilitate overexploited aquifers, plans for drought management, and other broader areas, such as rural development policy

Strategic planning

The diagnosis showed that much had been done in the past, but that policies and actions had been dispersed because issues of soil and water resources affect many sectors. This underlines the importance of coordinating policies under the NAPD, essential if harmonized solutions are to be found, and harmful land-use conflicts avoided.

A wide range of diverse measures have been taken in farmland, forests and water resource management, covering research and development, monitoring and evaluation, and awareness raising.

Eco-friendly regulations have integrated environmental considerations into farm policy on prices and markets, with a range of preventative requirements and practices against unrestrained desertification. The programme of agro-environmental measures – which obliges all farmers to follow a code of good practices – has been consolidated and has proved to be a useful instrument in combating desertification. And there have been positive results from another programme which offers incentives for reforestation, especially in marginal areas.

The Spanish Forestry Plan – whose objectives, priorities and action guidelines are integrated with regional plans and strategies – aims to protect soils against erosion and desertification, regulate water sources and supply, and undertake dynamic planning of water basins, focused on sustainable management of resources.

These activities are co-financed by the European Union, while the Department of Biodiversity will invest some 80 million euros in the Plan in 2005–2008: this year 10 million euros will be spent on urgently restoring areas affected by forest fires. Each of the planning instruments used – the "National Soils Erosion Inventory", the "Forestry Map", and the "Planned priority activities for water-forestry restoration, erosion control and defence against desertification" – sets out a basic range of activities, defines priority areas, puts forward proposals and appraises possible actions.

Among other measures in this field, a Plan of Control of Forest Resources will provide sustainable forest management. Over 16 million euros will be invested to improve facilities for preventing, observing and extinguishing forest fires, and for providing preventive sylviculture and awareness campaigns. And work will ▶

be done to defend and protect mountain areas against pests, diseases and damage arising from drought and other adverse climatic conditions.

Water policy

Water policy combats desertification by mitigating the effects of drought, and managing groundwater and the salinization of soils by irrigation systems. River basin authorities have prepared special action plans for emergencies and possible drought, and a global system of water resources indicators. The Ministries of Environment and Agriculture, Fisheries and Food, have established a National Drought Observatory as a centre of knowledge to forecast, mitigate and monitor its effects. The Agrarian Administration provides drought insurance cover for the main arid area crops.

Managing and protecting groundwater is to be incorporated into water resource planning, while a Groundwater Action Plan should be prepared for each river basin to facilitate sustainable use. Under the Water Act, every basin plan must contain planning for water, forestry and soil conservation, and should include protective action for catchment areas and for regulating the water cycle. The National Water Plan incorporates this, while the National Irrigation Plan contains environmental criteria for land and water management to prevent land degradation, restore aquifers and reduce the processes of desertification. There is also a programme for environmental monitoring of irrigation, to track the changes in its effects and possible remedial measures.

Research and development

Spain has a large and varied research community studying desertification. The main studies were first undertaken in the 1970s: many were part of the LUCDEME Project while others were carried out by universities and the Higher Council of Scientific Research. Since 1986, all these efforts have been incorporated into the National Research and Development Plan. Autonomous communities and the European Union also devote attention to these matters.

Various instruments for assessing, monitoring and making inventories of areas affected by desertification are outlined in the working document of the National Action Plan. The Department of Biodiversity is responsible for:

■ The soils maps of the LUCDEME Project, which help plan restoration or rehabilitation in areas affected by desertification, and are essential for preparing maps showing the capacity of use and vulnerability of any given territory. They have been drawn up since 1985 in collaboration between the universities and the Higher Council for Scientific Research. 142 maps now cover 13.93 per cent of the country and will be expanded in the medium term to cover all affected provinces. More than 450,000 euros will be spent on mapping and digitalization in 2006–2007.

■ The network of experimental monitoring and assessment of erosion and desertification (of the LUCDEME Project) has 46 experimental stations, managed by universities and research centres under agreements with the Department of Biodiversity. It was established in 1995 to coordinate and better use studies by various research since the 1980s, and provides 'in situ', continuous and detailed monitoring of the essential mechanisms of desertification. One and a half million euros will be allocated to its maintenance in 2006–2008.

■ Assessment of action to combat desertification, demonstrating useful techniques to apply to affected areas, and disseminating available strategies and restoration methods in Spain and other member countries of Annex IV of UNFCCD. Its allocation will be 380,000 euros.

■ The National Soils Erosion Inventory, which updates the map of the state of erosion in the entire country drawn up between 1986 and 2002. Maps of 13 provinces have been published, six more are being prepared, and work is about to begin on a further four provinces. The allocation will be 3 million euros.

■ Establishing a system of indicators of desertification in Spain. Once their selection and definitions are completed, they will be applied to specific cases.

A register and database describing all the sectors linked to combating desertification is being prepared and meetings and workshops arranged to promote their assimilation and technological improvement. Materials are being published, and exhibitions held. A network of demonstration projects is being set up to cover restoration and sustainable management of the affected areas: this identifies, formulates and develops a group of projects, and shows the technical, environmental and economic feasibility of proposals for managing, using and/or restoring land involved in combating desertification.

Spain is to hold two major meetings to study all aspects of desertification in greater depth. The Second International Symposium on Desertification and Migrations will be held in Almeria from 25 to 27 October 2006, marking the International Year of Deserts and Desertification. And in autumn 2007 we will host the UNCCD's eighth Conference of the Parties ■

Cristina Narbona is Minister of the Environment, Spain.

Otto Stadler StillPictures

Thirsty Land

Untapped Opportunity

JACQUES DIOUF says that drought and water scarcity is the greatest threat to global food production, and calls for greater investment in water control

Mark Edwards/StillPictures

World food supply is still at the whim of the weather. Eighty per cent of the world's food crises are linked to water and especially to drought. The chronic vulnerability of people in Africa's Sahel zone demonstrates this fact time and again – last year in Niger, today in the Horn of Africa.

With 852 million chronically hungry people in the world today and world population expected to grow by an additional 2 billion people by 2030, feeding this growing population and reducing hunger will only be possible if agricultural yields can be increased significantly. And increased food production will depend largely on investment in the control of water, the cornerstone of agricultural development.

Irrigation, which currently provides only about 10 per cent of agricultural water, plays a crucial role in crop production, especially in arid or semi-arid regions. When rains are weak or erratic, irrigation can ensure crop production and allow farmers to invest in more productive agriculture, which means not only greater food security and better nutrition for rural populations, but also job creation and increased earnings and trade opportunities.

Productivity from irrigated land is about three times higher than from rainfed land. Today, irrigation covers about 20 per cent of the world's cropland, but irrigated land contributes 40 per cent of total food production.

In Africa, only seven per cent of the arable land is irrigated, compared with 38 per cent in Asia. Africa uses less than six per cent of its renewable water resources, compared with 20 per cent in Asia.

Rural infrastructure

Approximately 40 per cent of Africa's commercial food import bill (which was $16 billion in 2003) comprises staples – wheat, maize, rice, and sugar – as traditional rainfed production has been unable to match food demand, particularly from the rapidly expanding urban centres. Management of Africa's water resources to improve both rainfed and irrigated production and investment in associated rural infrastructure is therefore the only sensible alternative to rising food import bills. According to the Commission for Africa's report *Our Common Interest*, $2 billion of investment will be needed each year to develop water control for agriculture in Africa.

The Near East is the world's most arid region with the highest levels of water deficit. Water resources in ▶

16 countries in the region amount to less than 500 cubic meters per person per year, compared to the global average of almost 7,000 cubic meters. Irrigation has always been crucial to agriculture in this region, where water resources are often exploited beyond their replenishment capacity. Moreover, growing urban and industrial demand for water associated with high population growth means a gradual reduction in the volume of water available to agriculture.

Any increase in agricultural productivity requires an improvement in irrigation technologies and a diversification in production towards crops with high added value. Other components of good water management in this part of the world are the recycling of treated waste waters and a better control of soil drainage and salinity.

Food security

Small-scale water harnessing, irrigation and drainage works carried out at rural community level with local labour are effective, low-cost water control options. Water harvesting – collecting water in structures ranging from furrows to small dams – allows farmers to conserve rainwater and direct it to crops. And localized methods such as drip irrigation, which direct water only where it is needed, are more efficient than flooding fields and using sprinklers.

The Food and Agriculture Organization (FAO) has been promoting simple, low-cost water control technologies, such as those through its Special Programme for Food Security, which supports localized actions in over 100 countries to strengthen agriculture and improve living conditions in rural communities. Since 1995, $800 million provided by donors and national governments have been invested in programmes designed by FAO to improve food security.

Vast potential

Large-scale public irrigation schemes, which represent the bulk of the world's irrigation, have contributed to alleviate poverty and boost agricultural production in Asia, the Near East and parts of Latin America. In a context of rapid economic development, these ageing systems face the challenge of modernization: upgraded infrastructures and increased flexibility and reliability of water services are required to meet the needs of agriculture in transition.

In all cases, considerable public and private investment in infrastructure, technology and the development of farmer capacity for water management is still needed if we are to increase food production in a sustainable way and meet the target set by the World Food Summit of reducing by half the number of hungry people by 2015.

Improved agricultural water control is a growth engine for rural development – enhancing food security and improving nutrition, creating jobs and revitalizing local markets. As the demand for food continues to grow with rising population and incomes, we cannot afford to leave this vast potential untapped ■

Jacques Diouf is Director-General of the Food and Agriculture Organization of the United Nations.

Seizing *the Chance*

HAMA ARBA DIALLO calls for urgent action to tackle one of the greatest causes of poverty and conflict

Twenty-first century adults, like us, can only marvel at the magnitude of technological change that has swept us along in its wake. At the same time – as city populations grow apace – more and more of us live in environments where nature plays little role and seems of equally little regard. It is out of sight, and therefore out of mind. Yet we depend more than we sometimes care to realize on the web of life of which we are a part.

Television, that potent symbol of modern technology, delivers the stark evidence. Images of droughts, floods and forest fires are beamed into our homes with ever-increasing frequency, alongside debilitating images of poverty that are seemingly at odds with our modern world of plenty. They remind us of the price to be paid for ignoring the environment that sustains us.

Social implications

Desertification, or land degradation, is one of the most alarming processes of environmental degradation. Though partly due to climate change, it is primarily the result of such human-induced factors as over-cultivation, over-grazing and deforestation. Contrary to widespread belief, it is a truly global phenomenon with serious economic and social implications.

The international community recognised the urgent need to combat desertification at the 1992 Rio Earth Summit. The UN Convention to Combat Desertification (UNCCD) was adopted two years later as an international ▶

legally binding instrument to address the issue. Ratified in 1996, the Convention now counts 191 Parties, the largest membership of any of the Rio Conventions.

The intervening years have seen progress in placing desertification on the international agenda, but the issue still fails to receive the recognition it deserves.

Unique opportunity

In a timely reminder to the international community of the urgency of the problem, the United Nations General Assembly designated 2006 the International Year of Deserts & Desertification (IYDD). The title reflects the important distinction between deserts as a unique ecosystem on the one hand, and desertification, the loss of the land's biological productivity, on the other. It thus serves two distinct purposes: both highlighting the need to fight against desertification as a global sustainable development challenge and celebrating deserts as a natural habitat with captivating richness and cultural diversity.

The livelihoods of over a billion people, in more than one hundred countries, are directly threatened by dryland degradation. The consequences are equally broad and great

The Year is a unique opportunity to raise awareness among the broadest possible audience and to galvanize policymakers and the public at large into action. It is a chance that must be seized, given the staggeringly sobering statistics that belie the complacency with which the issue of desertification is often treated. Drylands cover approximately one third of the earth's surface. The livelihoods of over a billion people, in more than one hundred countries, are directly threatened by their degradation. The consequences are equally broad and great.

Food insecurity caused by the loss of productive land creates a spiral of poverty, forced migration and social and political conflict. By 2020, it is estimated, 60 million people will have to move from desertified areas of sub-Saharan Africa towards North Africa and Europe.

Security implications

The implications for peace and security do not need to be spelled out. Desertification has already been identified by NATO as posing a very serious threat to security in the Mediterranean region. It has also recently been the catalyst for a number of conflicts in arid lands. Such conflicts, resulting from competition over scarce resources, have the serious potential to escalate to interstate violence. Nobel Peace Prize Laureate and IYDD Honorary Spokesperson, Wangari Maathai, has pointedly spoken of the "nexus between peace, security and environmental degradation." She recently described desertification as the 'new enemy' that harms peace.

The inextricable link between desertification and poverty ought also to shake people out of inertia. A recent major report of the Millennium Assessment entitled 'Ecosystems and Human Well-Being', described desertification as 'potentially the most threatening ecosystem change impacting the livelihoods of the poor. The correlation between both issues was explicitly spelled out at the 2002 Johannesburg World Summit on Sustainable Development, which recognised the Convention as a key instrument for poverty eradication, the first of the eight Millennium Development Goals (MDGs).

Poverty eradication

Nearly three quarters of the poorest people on earth live in rural areas, according to the World Bank. A large majority of them depend on agriculture for their daily subsistence. Forced to extract as much as they can from the land for food, energy, housing and income, the poor become both the cause and the victims of desertification. And, in turn, desertification becomes both the cause and the consequence of poverty. Clearly this is no one-dimensional environmental issue. The fight against desertification therefore requires a multi-layered approach, integrating the environmental aspect into a broader socio-economic framework.

The UNCCD stands at the helm of this process. Its main tool are National Action Programmes (NAPs) to combat desertification, which evaluate the nature and intensity of the problem in each country and identify the necessary action to be taken. A key UNCCD strategy – known as the 'bottom-up' approach – is deployed in the process, and gives special emphasis both to involving rural communities, and to empowering women.

Collective action

Governments are encouraged to integrate the NAPs into their poverty reduction and investment strategies. Successfully implementing these programmes, however, depends upon the cooperation of a broad international coalition of partners willing to provide the necessary technical and financial assistance. In other words, it requires collective action as an appropriate response to collective responsibility – the only way forward in seeking to put the world firmly on a path of development that really is sustainable.

Future generations

"The world is not ours, the earth is not ours. It's a treasure we hold in trust for future generations," runs an African proverb. How will those generations judge us? Former US President Lyndon B. Johnson sounded these words of warning: "If future generations are to remember us with gratitude rather than contempt, we must leave them more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it." Timely implementation of the Convention will go a long way towards leaving such a proud legacy ■

Hama Arba Diallo is Executive Secretary of the United Nations Convention to Combat Desertification.

UNEP Still Pictures

PEOPLE

Mikhail Gorbachev is one of seven 'green leaders' celebrated as the **2006 Champions of the Earth** by UNEP. The awards, presented for the second time, recognise prominent and inspirational environmental leaders from each region of the world.

Mr Gorbachev received the award for Europe on 21 April – at a gala event hosted by UNEP, the Singapore Ministry of the Environment and Water Resources and the Singapore Tourism Board – for being "a champion in the field of international environmental politics and for conflict prevention on waterways globally."

His citation described how "as President of the former USSR, he made policy changes aimed at halting the worst contamination and destruction in the country – changes such as closing thousands of heavily polluting factories and preventing a major scheme to divert the rivers of Siberia." It noted his foundation of Green Cross International and his work with the organization on water conflict prevention initiatives in the Middle East, Africa, South America, Central Europe, and in his own native river basin, the Volga.

Tewolde Berhan Gebre Egziabher of Ethiopia, a champion against the patenting of life forms and for community rights, was given the award for Africa. He was commended for having "built a strong group of well-prepared African negotiators with united, strong and progressive positions" at such biodiversity-related fora as the Convention on Biological Diversity and the Food and Agriculture Organization and for "encouraging African countries to develop and implement community rights, a common position on Trade-Related Aspects of Intellectual Property Rights, and a clear stance against patents on life"

The award for Asia and the Pacific was presented to **Tommy Koh** for his contributions to the cause of the environment by chairing the main committee and preparatory committee of the 1992 Earth Summit and for spending a decade helping to negotiate the landmark 1982 UN Convention on the Law of the Sea, being elected President of the negotiating conference in its critical final year.

Rosa Elena Simeon Negrin of Cuba, a champion of small island developing states and a regional force behind the philosophy of "thinking globally and acting locally" posthumously won the award for Latin America and the Caribbean. "Her steadfast, committed and selfless work has been vital for fostering the notion of sustainability and for raising the environmental awareness of Cubans" said the citation.

Mohamed El-Ashry of Egypt – a champion for the wise use of natural resources and a former head of the Global Environment Facility – was presented with the award for West Asia after more than 35 years of protecting the environment through a career spanning academia, public sector institutions, non-governmental organizations, think tanks, and international institutions.

The award for North America went to a group – The **Women's Environment and Development Organization (WEDO)** – which for over 15 years has championed women's economic, social and gender rights and has been a beacon for the empowerment of women across the environment and development debate. Established in 1990 by former U.S. Congresswoman Bella Abzug and feminist activist and journalist Mim Kelber, it continues to galvanize the energy and spirit of women worldwide for a healthy and peaceful planet.

In addition, **Massoumeh Ebtekar**, Iran's first female vice-president and a champion of cleaner production in the petrochemical industry, was awarded a special prize. The citation says that her "philosophy that sustainable development depends on maintaining the balance between economic growth and environmental concerns is one that the United Nations shares".

Klaus Toepfer, UNEP's outgoing Executive Director, said at the announcement of the winners in late March, "A renaissance in environmental politics and policy needs the long-term commitment and vision of men and women. It needs people who have been and continue to be Champions of the Earth."

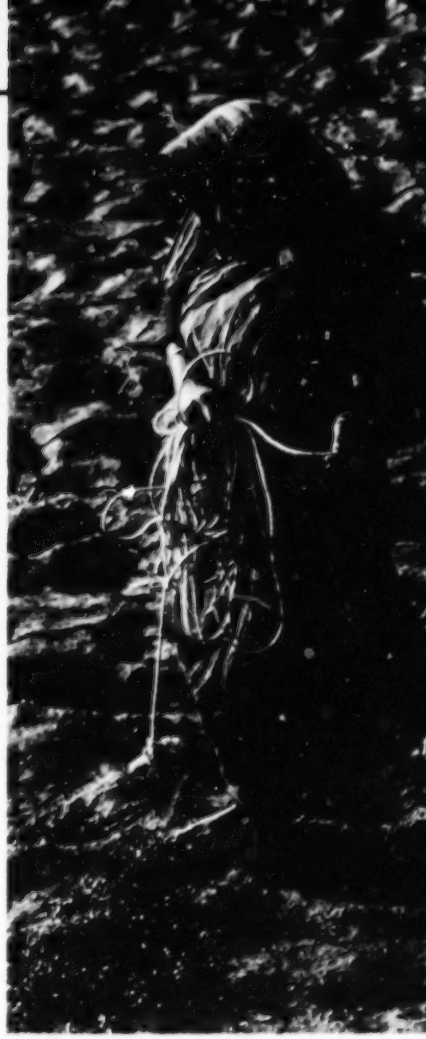
The ceremony was held with the support of sponsors and partners including the Asia Pacific Resources International Holdings (APRIL), the Lien Foundation and Nanyang Technological University. Other supporters include: CNN Fortune, Time, Eco 4 The World Foundation, Singapore Environment Council, Channel News Asia and Today.

No monetary reward is attached to the prize. Each laureate receives a trophy made of recycled metal especially designed by the Kenyan sculptor Kioko, representing the fundamental elements for life on Earth – sun, air, land and water ■

Don't Desert

Dryland Peoples

PHILIP DOBIE says that good government, which supports the people of the drylands, is the most important element in beating desertification and hunger



Millions of people in the Horn of Africa face abject starvation this year. The rains have failed again and their livestock are dying. They have nothing to sell to raise money for food, and unless food aid arrives quickly, their future is bleak. Desperate famine is also endemic in many other parts of the world. Understandably people believe it is inevitable.

In the same way, economists looked at famines in India in the 1950s and deduced that no amount of assistance could save the country from starvation and decline. Food production was stagnant and the population was growing: nothing could prevent disaster. But an unknown scientist, Norman Borlaug, either never heard the doomsters, or ignored them, and set about creating high-yielding varieties of wheat. In collaboration with Indian scientists – under the leadership of M.S. Swaminathan – he brought about the Green Revolution. He won the Nobel Peace Prize, and India progressed to become an emerging economic giant. Since then, scientists and farmers around the world have continued to prove the sceptics wrong.

Enterprising farmers

The people of the world's drylands face the greatest development challenges. They survive in areas where rainfall can be as little as one tenth of the level in highly productive agricultural zones. Rain also tends to be erratic – with frequent droughts – and often falls all at once, causing brief but destructive floods.

Yet life can improve even in these dry places. In the 1970s, we were told that the deserts of North Africa were moving relentlessly south. The new science of satellite photography revealed an expanding Sahara Desert. But recent work in the Sahel has shown both that the desert is now retreating, and that enterprising farmers have improved their management of the soil so much, that productivity is increasing and food production has improved beyond all expectations.

Market opportunities

Meanwhile, studies in Kenya and elsewhere have confounded experts who predicted that increasing population density would inevitably lead to over-using of land and to desertification. In fact people revelled in the new market opportunities presented by more people, and began to use the land much more carefully. It became apparent that the real enemy of development was not nature, but wrong policies that assumed that people were helpless. Wherever governments have put their weight behind their people and helped them to make the most of their environments, lives have improved.

In China and Latin America, hunger is now a thing of the past. Adults there show signs of being shorter than they should be, because they had hungry childhoods. But their children are growing normally, because they are better fed.

The famine-torn parts of the world contrast with those where it has been cured not so much in terms of their physical and meteorological conditions, but in the way they are governed. The Nobel Prize-winning economist Amartya Sen famously said that famines do not occur in democracies; he showed that people usually starve not because there is no food, but because they are so poor and politically marginalized that they cannot afford to buy it.

Development failure

Similarly, drought – apparently the cause of all of the ailments of the drylands – should be seen not so much as a meteorological phenomenon, as a failure of development. There is every reason to believe that even the driest parts of Africa should be able to produce livestock as profitably as the even drier Australia. The semi-arid zones of the world could produce crops to compare with the equivalently dry North American prairies.

We should be shifting investment rather than food aid into the dry zones: veterinary services, cold

People usually starve not because there is no food, but because they are so poor and politically marginalized that they cannot afford to buy it ▶

stores and access to the meat markets for the dry livestock-producing areas; agricultural diversification and market support for semi-arid parts. It can work if the policies are right. Recently, Mali became Africa's largest producer of cotton. It is of very high quality, in great international demand; yet Mali's cotton farmers are being driven to ruin by cheap subsidized cotton from OECD countries.

Better livelihoods

So, will better international and national policies lead to better productivity, better incomes and better livelihoods? The answer is probably "yes" – but Malthusian pressures threaten all the development improvements of the last generation.

Although population growth has reduced tremendously in developing countries, it is still huge in the poorest parts of the globe. World population is still expected to double in a generation. At the same time, the people of the world are consuming more as they become richer. Population growth and consumption are together leading to a scarcity of resources that could limit economic and social development. The goal of sustainable development could become even more elusive.

Population growth and consumption are together leading to a scarcity of resources that could limit economic and social development

Water, already in short supply in poor and dry parts of the world, will become even scarcer in the near future. Over-use by agriculture has caused water tables to fall catastrophically around the world, while deforestation has reduced the flow from watersheds to plains. Our growing dependence on fossil fuels is leading to atmospheric changes that can be expected to change rainfall patterns significantly. Unless people can mitigate these phenomena – or adapt to them – much of our recent development is threatened.

Human development, however, is not a story not of capitulation to the vagaries of nature: it is one of innovation and adaptability overcoming natural obstacles. There is no reason to believe that we cannot similarly overcome the challenges of the next century. But time is running out for the world to recognize that environmental management is not a luxury for rich countries, but a prerequisite for development.

Taking care of the environment is a vital component of poverty alleviation and is necessary for the sustainable development of the Earth. Humans can develop the technologies that will reduce our current abusive rate of resource use. We need to manage our ecosystems much better to maintain the services they provide – adequate water, clean water, clean air, good soil, and much more.

Immediate attention

Environmentalists have failed to convince the economists who set development priorities that environmental management is an investment, not a cost. Yet millions of starving people in the poorest parts of the world suffer from the environmental excesses of others and from development decisions that continue to isolate and impoverish them. They will be the first to suffer from changes in the world's climate, and should be the first to receive help to adapt. They need immediate attention to protect the sources of their water, to improve the state of their soils and the conditions of their rangelands. They need improved livestock breeds and enhanced crop varieties that can use water more efficiently.

Above all, they need decision-makers to stop treating them as hopeless welfare cases, but as people who have lived with difficult conditions for millennia. A blend of good policy and good environmental management will ensure that their children, like the rest of us, can benefit from development ■

Philip Dobie is Director of the UNDP Drylands Development Centre, Nairobi.

Desertification

Has a Woman's Face

FANNIE MUTEPFA says that land degradation hits women hardest but that they are often bypassed in attempts to combat it

Women, who make up two thirds of the approximately 1,3 billion people living in dire poverty, are more affected by land degradation than men. Their dependence on natural resources for the survival and sustenance of their households make them particularly vulnerable to it. They often lack alternative ways of earning a living – and are less able to invest in sustainable land management – and so have to exploit their fragile environments further.

Traditional wisdom

Increasing firewood scarcity places heavy burdens on women as they often have to go further to collect it, or rely on mostly inefficient and polluting forms of energy like cow dung. Many governments and NGOs have stepped up efforts to reduce deforestation by providing other sources of energy for domestic use such as solar, biogas and wind. Women should, however, be more directly involved in the design of such programmes. The high cost of renewable energy is a major constraint for women and every effort should be made to make it more affordable.

Plant and animal biodiversity is lost along with the forests, which are an important source of fruits, medicines and natural products for rural women. Most communities in Southern Africa depend on wild fruits and roots during drought years. Women collect insects and worms from forests, and forest mushrooms also provide a rich source of protein for many rural households. Village women know – through oral traditional wisdom – which trees provide medicines: their loss is a serious matter for them as they are the care-givers in homes and communities – especially so in the face of the HIV/ AIDS pandemic. Forests also provide the raw materials for basket making and other village crafts.

Declines in soil fertility through land degradation, reduce crop yields and compromise household food security. This particularly affects women, as they are responsible for planning meals and cooking. It also especially affects them in the fields as they usually cannot afford to buy artificial fertilizers and are forced to collect plant residues and other forms of organic manure instead – often an unbearable physical burden. Similarly, drought resistant small grains are not priced to offer incentives to women producers, who are then forced to continue producing unsuitable crops, resulting in failures and reduced yields. There is need for research therefore, with the full participation of women, into crops that will thrive in impoverished soils.

Conflict resolution

Environmental conflicts over diminishing natural resources – like grazing lands, water sources, and forests – are increasing in many rural areas of Africa. Men usually are at the forefront, given the fact that the fight is usually about ownership and control. Women tend to be left out of arbitration and conflict resolution, with the result that solutions may be irrelevant to their needs.

Land degradation is accelerating urbanization. Able-bodied men leave rural communities each year to try to get employment in towns and cities. The women are often left behind to care for the family and look after the family assets – as well as to perform community productive functions – giving them additional burdens.

The population profile of a typical rural village in Zimbabwe for example comprises: a few very old men, more older women, very few young and middle aged men, many middle aged women, and quite a big number of young children. This hardly allows for equitable sharing of community responsibilities.

Priority themes

African National Action Programmes (NAPs) under the Convention to Combat Desertification reveal glaring deficiencies in specific interventions for women. Although most highlight such priority themes as integrating land and water management, providing alternative energy sources, information systems, and research and development, these have not been analyzed from a gender perspective to assign interventions according to needs based on gender roles and responsibilities. The UN Millennium Project Taskforce on Education and Gender Equality noted ▶

Mark Edwards/StillPictures

Mark Edwards/Still Pictures

three dimensions of empowerment that affect women's enhanced participation in development: equal capabilities as measured by health and education; equal access to opportunities and resources; and women's ability to claim their rights and participate in decision making processes. These critical empowerment dimensions have not been incorporated in many of the NAPs being implemented to address land degradation and desertification.

The Convention takes pride in spearheading participatory processes, but the NAPs take a blanket view of communities without disaggregating according to sex, age and class. A review of a list of projects included in NAPs reveals very few that target women as sole beneficiaries. Renewable energy projects, for example, can alleviate the problems that women face in securing fuel wood, but their current design and adaptation often fail to take into account female needs and concerns.

The majority of reports submitted to the Committee on the Review of the Implementation of the Convention hardly mention the strategic role of women in improving the economic environment, conserving natural resources, improving knowledge of desertification, and monitoring and assessing the effects of drought.

Women play critical roles in community income-generating enterprises such as bakeries, garment making and tailoring, soap making, and pottery. Yet the NAPs fail to clearly define the incentives that governments should put in place to create an enabling environment.

Improving information and communications and providing alternative technologies could help women, if based on thorough consultation and participation in their design, formulation and implementation. Without this process, projects often fail because they are designed using irrelevant or inadequately gender-specific information. This became clear, for example, when women who obtained fuel-efficient mud stoves under one scheme in rural Zimbabwe hardly used them and continued with their traditional ones. There was such inadequate consultation that the stoves could not accommodate some of the women's' cooking pots. There was improper understanding of the materials that could make the mud stoves stronger. And there was limited training for construction of more stoves. This illustrates the fact that women must be included in developing and adapting technology so that it suits their needs.

Community information

Community Information Centres and kiosks are gaining popularity in many African countries, including Zimbabwe, but it is not clear whether women have been consulted on their location and mode of operation, so that they can use them while still continuing to perform their other community roles. Women must also be consulted on the information provided, so that the centres equip them with knowledge on improved crop production techniques, pest management, water harvesting techniques, post-harvest processing and storage sources of ecologically suitable seed varieties, sources of agriculture inputs, and sources of markets and the prices of commodities.

Land reform

South Africa and Zimbabwe have indicated that their land reform programmes are critical to fighting land degradation. Zimbabwe's land reform programme stipulates that 25 per cent of the land should be allocated to single, widowed and divorced women. This is just the beginning of a process toward total empowerment, since, with land ownership, women will be able to borrow and invest in sustainable production, leading to higher financial gains. Land reform should provide an enabling environment that provides for the sharing of indigenous knowledge amongst women from different communities. It could provide for economic incentives such as special lines of credit for women to go into livestock production. It should also encompass sustainable land management, environmental assessments, and environmental monitoring and evaluation, giving special emphasis to the roles that women are best able to perform; in particular they could be trained to track environmental change and land degradation.

Capacity building

Much has been said on the need to integrate and empower women to manage the environment, and many policy instruments exist on this. But much remains to be done on the ground to ensure that women become the real managers of the environment. Gender mainstreaming must become common practice through effective capacity building and institutional coordination. Implementing the Convention should address fundamental structural and systemic gender inequalities – otherwise sustainable development will forever remain mere rhetoric ■

Fannie Mutepfa is the International Coordinator of the Great Limpopo Transfrontier Park and a member of the board of Zimbabwe's Environmental Management Agency.

Mark Edwards/StillPictures

Filling *the Gaps*

TIMO MAUKONEN says that increased knowledge and information on deserts and drylands is essential for both their development and conservation

Desertification, as a concept, dates back to West Africa in the colonial 1920s and 1930s, but was revived in the early 1970s in an attempt to understand a long series of drought years that brought environmental degradation, economic hardship and famine to the African Sahel. Grim pictures of the extent of human suffering there sparked intense humanitarian, political and scientific concern around the world.

The issue emerged as one of the first major environmental problems of global concern at the the 1977 UN Conference on Desertification, hosted by UNEP in Nairobi. The United Nations Convention to Combat Desertification (UNCCD) – which has poverty and the peoples of the drylands as central themes – was signed in 1994, and has now been ratified or accessed by 191 countries. The United Nations General Assembly declared 2006 the International Year of Deserts and Desertification (IYDD), and every June 17th from this year on has been designated World Day to Combat Desertification.

Land degradation

More than 1000 million people live in the rural areas of the world's drylands, which cover some 40 per cent of Earth's land surface. Economically dependent on agriculture, they are most at risk from land degradation. The vast majority – 94 per cent, by one estimate – of desert dwellers live in developing countries, where population growth rates are among the highest: since the beginning of the 20th century the number of people living in developing country deserts has multiplied eightfold. The recent Millennium Ecosystem Assessment reports that half of the world's poor live in drylands adding: " Desertification is potentially the most threatening ecosystem change impacting livelihoods of the poor. Persistent reduction of ecosystem services, as a result of desertification, links land degradation to loss of human well-being."

Hydrological systems are fragile in drylands, arid, semi-arid and sub-humid areas. Rainfall is low and sometimes erratic and evaporation is high. This exposes people to many hazards – including droughts, flash floods and bush fires – which severely affect many communities, creating environmental refugees, and hampering sustainable development.

The causes of land degradation are both man-made and natural. Population pressure and bad land management originate it, but humanity exacerbates it by overcultivation, deforestation and other inappropriate uses. Drought, erosion by wind and water, and other natural factors also play a part.

Marginalized people

It is easier to prevent desertification than to reverse it. Better management of crops, more careful irrigation and providing jobs outside farming for dry land people can help to address the problem. There are success stories on sustainably managing and rehabilitating degraded lands. Progress is also being made through introducing such practices as conservation tillage, judicious soil fertility enhancement, better-adapted crops and crop varieties, and better water management. Yet overgrazing, mining of soil fertility and other unsustainable agricultural practices still remain. Attempts to implement technical solutions to land degradation are also strongly influenced by policy, and social and economic drivers such as migration, urbanization, gender bias, land tenure, stakeholder and natural resource conflicts, markets, effectiveness of public support, and international trade agreements. Desertification is a social issue of marginalized people, who are not necessarily the first priority either in developed or developing countries.

Although the drylands do not have much water, they do have other natural resources that can be exploited, including minerals, valuable genetic material from plants and animals, and great potential for generating solar energy for use elsewhere. Few places on earth contain a richer collection of natural adaptations to the environment, while their abundant sunshine is enormously underexploited. The scientific ▶

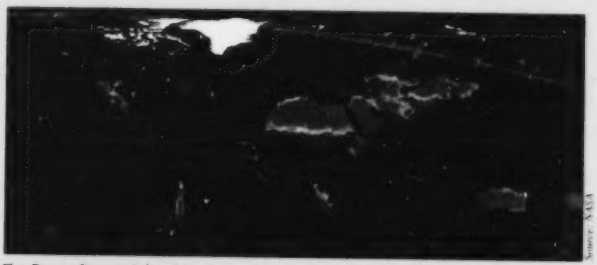
knowledge and engineering skills to generate sustainable incomes from deserts already exist, but appropriate action needs to be determined, and the proceeds must be equitably shared.

Knowledge on desertification has increased during the last decades but there is still a lack of data on the magnitude of the problem, though the more synoptic view offered by satellite remote sensing in the 1990s gave rise to a perhaps less catastrophic picture. Systematic observation and data collection on natural resources and their uses is essential. These are needed for better understanding of land degradation and for assessing the processes and effects of drought and desertification. They are also necessary to provide early warnings to decision makers to help them value ecosystem services realistically for development and conservation policies, to facilitate increased investment in improved land management, and to justify investments in sustainable livelihood options. UNEP, in collaboration with partners, strives to improve the quality of existing knowledge and to fill the data gaps through global and regional programmes, such as Land degradation Assessment in Drylands, the Global Land Cover Network and the Desert Margins Programme.

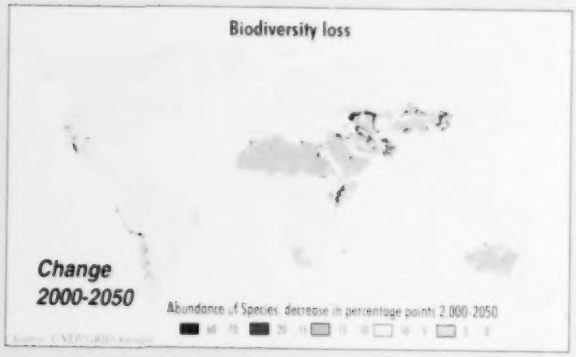
UNEP has also undertaken a global assessment of deserts as part of its global environmental assessment programme. Global Deserts Outlook is the first thematic assessment report in UNEP's Global Environment Outlook (GEO) series and, in conjunction with the IYDD, aims to help raise global awareness of the state of world's deserts. The report presents a panorama of the environmental status of the world's deserts: their location and extent, uniqueness and vulnerability, biodiversity and natural resources. It provides a balanced picture of the world's deserts, as ecosystems which form a special part of the world's natural and cultural heritage, and not simply as land that is the end result of the process of desertification. The report also covers deserts' fragile ecologies and their unique biota by highlighting the importance of the desert environment and its products such as crops originating from drylands, oil and mineral deposits, tourism, and their cultural values. It also highlights the challenges that countries and people face when exploiting desert resources and puts forward an outlook for future desert development and the need for conservation. The knowledge and technology exist to manage these resources sustainably; the challenge lies with determining and implementing appropriate actions for desirable long-term outcomes. ■

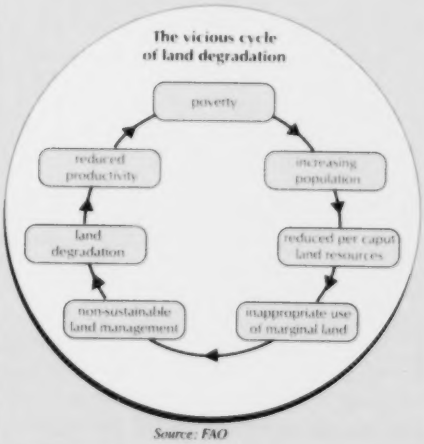
Timo Maukonen is Senior Programme Officer in UNEP's Division of Early Warning and Assessment.

AT A GLANCE: Deserts and Drylands

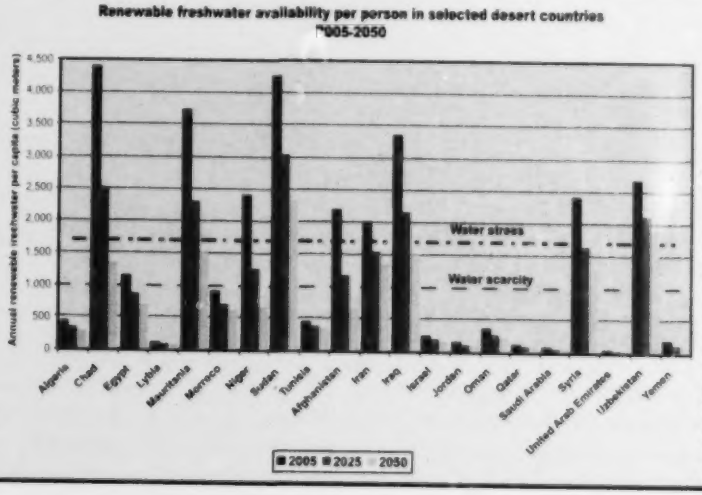


The Desert Biome defined by three criteria in combination: i.e., aridity, vegetation cover, and ecoregional traits (see map above). The intensity of the red colour indicates congruency between the three criteria: Areas in intense red correspond to regions where the three criteria coincide, areas in intermediate colour highlight regions where two criteria coincide, and areas in pale red show mark where only one criterion operates.





Source: FAO



Star Profile:

Stoichkov.net

Hristo Stoichkov, the legendary football player, has a new goal: combating desertification worldwide. The explosive left-footer – rated by some as one of the greatest players of the 20th century – has committed himself to focusing attention on what he calls "one of the most serious problems facing humanity".

Appointed one of three honorary spokespeople for this International Year of Deserts and Desertification – along with Algerian Environment Minister Chérif Rahmani and the Nobel Peace Prize winner Wangari Maathai – he aims to promote the message through the "probably most powerful and fraternal sport in the world".

Born forty years ago in Plovdiv, Bulgaria's second city "with a ball between his feet" – according to his mother, Penka – he grew up learning to kick it. His father was goalkeeper for the local team, Maritsa, and the young Hristo started as a ball boy for it. But by the age of 10 his talent was already so striking that he started playing for Maritsa in his own right.

Ten years later he was becoming a national hero as a player for CSKA Sofia, and by 24 had won the Golden Boot, as Europe's top goal scorer, after the team reached the semifinals of the Cup Winners Cup. In 1994 when he led his country's team – which had never before even qualified for the tournament – into the World Cup semi-finals with a stunning 2-0 win over Argentina, he gained another Golden Boot as the most prolific scorer of the competition.

By then he had led Barcelona to win the Champions League in 1992, and the Spanish Primera Division championship four years in a row. After finishing his playing career with Parma and in Japan and the United States, he was appointed coach to the Bulgarian national team two years ago.

Memorable for his unpredictable shots at goal, his explosive acceleration and speed dribbling, he became equally famous for his relentless singlemindedness. "Soccer is simple", he says. "You need to have the right mentality, fighting in every game, in every practice, for every ball."

He told *Our Planet* that he takes the same attitude to the fight against desertification. " This is an issue of such importance that it requires a very focused and targeted approach, as well as sustained effort. There is no short-term solution. My experience as a football player who fights to win can help me keep up the pressure to convince people not to be indifferent to the problem."

He added: "Since desertification is clearly not just an environmental issue, the only way to tackle it is to look at the broader picture. This means addressing other issues closely linked to it, such as poverty. "It requires a joint effort from the international community in close collaboration with the affected local communities".

Stoichkov first became interested in desertification through his travels as a footballer. "Although Africa is hardest hit, it is by no means the only part of the world affected. Many European countries, including my own, are suffering from land degradation, drought, soil depletion, and deforestation.

"In the course of my career I had the opportunity to play regularly in countries such as Spain, Italy, Japan, Saudi Arabia, and the United States, all of which are affected in one way or another by desertification. I have seen with my own eyes some of the consequences" .

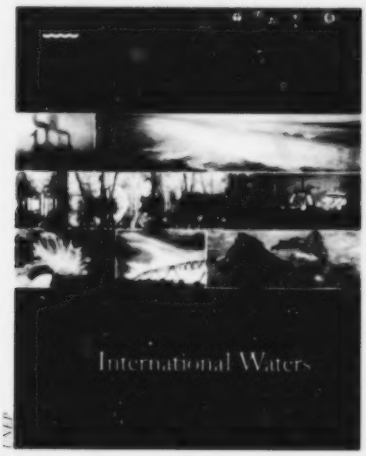
Stoichkov and Hama Arba Diallo, the Executive Secretary of the Convention to Combat Desertification, came up with the idea of organizing football matches and tournaments during the Year, to help increase awareness of the issue. One match is already planned between the Algerian national team and an international European team: it will be played in Algiers in October to accompany a desertification summit.

"Football is probably the most universal and popular game on *Our Planet*, and receives unrivalled attention from the media and public at large", he says. "With a little effort, it can be an important platform to help raise awareness of desertification and other environmental issues among the broadest possible audience."

"Just as football unites the world – and is enjoyed by all, old and young, rich and poor – so we can get the message across that desertification also affects us all, and that we have a responsibility to do something about it." GL.

Mark Edwards/Still Pictures

BOOKS & PRODUCTS



UNEP

The triennial **UN World Water Development Report** – a joint undertaking of 24 UN agencies – was launched at the **World Water Forum** in Mexico City, Mexico, in March. It presents a comprehensive picture of freshwater resources in all regions and most countries of the world, as it tracks progress towards the water-related targets of the **UN Millennium Development Goals .** It also outlines a set of conclusions and recommendations to guide future action and encourage sustainable use, productivity and management of our increasingly scarce freshwater resources. The **Global International Waters Assessment** – a UNEP-led and GEF-funded programme – published its final report at much the same time. Involving 1,500 experts, it warned that freshwater shortages are likely to trigger increased environmental damage over the next 15 years.

Clean Up the World, in partnership with UNEP, is encouraging members to organize environmental activities to coincide with **World Environment Day** (WED) in June 2006. Coordinated and promoted from Australia, the campaign inspires and empowers millions of people in over 100 countries to take simple, positive steps to improve and protect their environment. Last year's activities included workshops in environmental leadership training and sustainable development for decision-makers and young scholars in Morocco; recycling of tyres, lead acid batteries, appliances and scrap metal in Pennsylvania, USA; a drawing competition in Hue, Vietnam; and a month long Eco-Festival in Athens, Greece. **Clean Up the World Weekend** will be celebrated on 15-17 September 2006.

UNEP

The first major investigation into the environmental impact of the Israeli disengagement from Gaza last year, by and large gives it a clean bill of health. Other than some localised pollution and issues associated with asbestos, **UNEP's Environmental Assessment of the Areas disengaged by Israel in the Gaza Strip** did not find contamination of water, land or buildings that pose a significant risk to the environment or public health. It said that as long as recommendations concerned with the necessary clean-up are implemented there are no environmental constraints to Palestinian settlement in the area. As well as being good news for the environment and for possible future economic investment in Gaza, the report demonstrates how environmental issues can be a potential bridge-building element between the Israelis and Palestinians as they seek to find new grounds for cooperation.

SHARKS 3D – an IMAX theatre documentary that offers audiences an astonishing close-up encounter with these fascinating and endangered creatures has drawn in its two millionth viewer since its release a year ago. Distributed worldwide by 3D Entertainment in collaboration with UNEP and with the support of Jean-Michel Cousteau's **Oceans Futures Society** , it has established itself as the second highest grossing IMAX theatre documentary released last year. It follows the success of **Ocean Wonderland 3D**, focussing on the crucial function of the endangered coral reef system, released in February 2002 in association with UNEP and **WWF**.

UNEP

Prominent science journalists and writers from around the world have collaborated to produce **DRY**, a book of 16 snapshots of what it is like to live in drylands. Their essays – drawn together into a book to mark the International Year of Deserts and Desertification by the Academy of Sciences for the Developing World and the Third World Network of Scientific Organizations – span the drylands of Africa, Asia, Central and South America, and the Middle East. From the attempt to save Egypt's corncrake to the creation of nets to trap fog and convert it to usable water for the people of the Atacama desert, they tell how people attempt to improve their environment and quality of life through knowledge or research ■

Mark Edwards/StillPictures

Need

a Fresh New Start

MASSE LO and **OUSSOUBY TOURE** challenge the international community to put its weight behind the fight against desertification as part of the assault on poverty

Compared with other international conventions, such as those on climate or biodiversity, the Convention to Combat Desertification has received little political support from the international community. This is a disgrace.

This multilateral agreement is, after all, a real social project – "a Convention for life" in the words of one participant. It calls for greater democratization and pluralism and creates conditions for a better participation by citizens and civil society in the development of their country. And it even allows us to 'fight' immigration caused by desertification, the immigration so acutely felt and feared by the 'Western' public. Why, then, has it generated so little international public attention, and attracted so little funding?

The decision to designate 2006 as the International Year of Deserts and Desertification (IYDD) was taken ten years after the Convention was ratified and came into force. During that decade the countries most subject to land degradation have been forced to devise and implement national, regional and local action plans.

No less than thirty national action plans were prepared and submitted to the Convention Secretariat by African countries between 2000 and 2004. They undertook this laborious process with enthusiasm. And they did so in the spirit of the Convention which is based on such innovative principles as a continuing effort to increase the participation of civil society stakeholders in decision-making and planning, and better interaction between policy sectors. There has clearly been much common ground and a high level of participation.

Strategic plan

This is possibly the first time in some countries that a process dealing with the environment has brought together such a diverse group of stakeholders and permitted political dialogue at such a high level. During last October's Conference of the Parties of the Convention, in Nairobi, there were significant advances in, for example, improving synergies between it and the climate and biodiversity conventions. New initiatives were adopted such as the strategic plan for long-term measures to fight desertification, TerrAfrique. And progress was made in financing them through a Memorandum of Understanding with the Global Environment Facility (GEF).

Financial support

But these advances should not disguise deficiencies which affect the feasibility of devising and implementing the programmes to fight desertification, as well as their effectiveness and impact. There is a big gap between the scale of the problem of land degradation and the limited initiatives so far undertaken. Few of anti-desertification programmes, particularly in Africa, have received sufficient financial support, despite the achievements of the Global Environment Facility and of some bilateral and multilateral agencies, and the mobilisation of civil society stakeholders. This sorry state of affairs is particularly acute in countries that face falling revenues from agriculture and animal husbandry, which in turn result in food insecurity and the conflicts over the control of natural resources. ▶

The Convention stands for profound change in implementing development and cooperation policies. It is, indeed, a true development convention, relying on:

- Understanding the basic needs of local communities for education, access to clean drinking water, energy, and sanitation, etc.;
- Applying political and institutional pressure to reinforce the process of decentralization in managing natural resources;
- Widening the field of discussion to include non-governmental organizations, local communities, women's movements, youth, and other social groups who are often marginalized – demonstrating a dedication to democratic governance;
- Creating conditions that help to generate adequate revenue, allow local communities to improve their quality of life, and promote a policy of peace – all indispensable in driving sustainable development.

For all these reasons, it is no exaggeration to affirm that:

- Initiatives to combat poverty and its consequences (such as migration and conflict over the control of resources) which have led – under the aegis of the World Bank – to defining national strategies, are synonymous with combatting desertification;
- Action plans to combat desertification, within the spirit of the Convention, can help to make the Millennium Development Goals more concrete: as Klaus Toepfer, until recently UNEP's Executive Director, says: "Combatting desertification is crucial to the concretisation of the MDGs".
- Implementing action plans to combat desertification should favour more democratic governance and the principles of transparancy and accountability.
- Combatting desertification means mitigating the effects of migration, caused by deteriorating conditions in dryland areas. Falling agricultural yields in areas affected by land degradation are the main cause of migration.

The International Year offers a new opportunity to kick-start the process of implementing the tools in the action plans to combat desertification at national, regional and local levels.

More money must be allocated, and the action plans must be better integrated with macro-economic policies to overcome the constraints that inhibit the full functioning of the Convention, and to take advantage of all its opportunities. The new resources might take the form of 'new and additional resources', of public development aid, or of debt cancellation. What is important is that the Convention should be given enough to fulfill its vision.

Initiatives to forge new paths and formulate new objectives must be launched during the International Year. These could, among other issues, include increasing knowledge about desertification, its causes and consequences, especially in Northern countries, and highlight the relationship between desertification such other issues as food insecurity, poverty, etc.. Specific objectives that should be envisaged include:

- Mobilizing the largest Northern NGOs – the so-called 'Seven Sisters' – in the fight against desertification.
- Securing the international community's understanding that combatting desertification, attaining the MDGs, and the fight against migration and population fluctuations are all directly linked.
- Approaching (again) bilateral and multilateral development agencies and representatives of the G8 to persuade them to place the Convention at the top of their agendas.
- Finally creating the conditions to put in place an effective long-term strategic plan for implementing the Convention.

Last year's World Summit appealed for more pronounced support to implement the Convention, leading to hopes that the last Conference of the Parties would be a turning point for the international community in considering desertification more closely. It seemed that it had come to understand the Millennium Development Goals cannot be achieved without addressing the root causes of poverty in rural areas, which are inextricably linked to soil degradation and the resulting loss of agricultural revenue.

The Conference of the Parties, however, ended on a rather more discordant note, with the Northern countries calling for 'reforms' and the Southern ones trying to convince their partners that the fight against desertification is crucial, because of its links to the fight against poverty.

We must remain hopeful that 2006, the International Year of Deserts and Desertification will yet mean a new beginning. And that, this time, it will be a good one ■

Masse Lo, a former Coordinator of the African and World NGOs Network in Desertification, is Regional Programme Director of LEAD Francophone Africa. Oussouby Toure is a sociologist, environmentalist and international consultant.

Richard Lineo/UNEP

Only *Connect*

SARA J SCHERR and **CLAIRE RHODES** say that the Millennium Development Goals can only be achieved in the drylands by approaches that simultaneously deliver food security, rural livelihoods and biodiversity conservation

The challenges of the Millennium Development Goals (MDGs) – an unprecedented drive by the international community to address the deeply interlinked challenges of eradicating poverty, enhancing food security and ensuring environmental sustainability – are especially pertinent in the drylands. Representing approximately 41 per cent of the Earth's terrestrial surface, they are home to approximately two billion people, contain one third of the world's agricultural land use, sustain diverse areas of endemic biodiversity, and face increasingly severe risks of desertification and degradation.

Reducing poverty and hunger in the drylands will depend on sustaining their natural resources base, while improving crop, livestock, forest, and fishery production. Yet, widespread land degradation affects production in at least 70 per cent of dryland agricultural and rangeland systems, threatening both livelihoods and biodiversity.

Drylands house about 22 per cent of the world's protected areas, but these are proving insufficient to protect its rich, endemic and highly adapted flora and fauna. Agricultural expansion and intensification, and other land use changes, drive biodiversity loss and ecosystem degradation. Action to sustain livelihoods and biodiversity is particularly critical where people depend on crops and livestock in and around Protected Areas; in landscapes essential for biodiversity and watershed services under agriculture production; and in highly degraded areas where improved agriculture, livelihoods and biodiversity all depend on ecosystem restoration.

Community approaches

There must be urgent investment in approaches that jointly deliver food security, rural livelihoods and biodiversity conservation. Placing community-led approaches at the centre of national development strategies offers opportunities for this. While the international community struggles to reconcile targets on environment and poverty, many local communities around the world innovatively employ integrated ecosystem approaches – putting food security at the heart of conservation, and conservation at the heart of food security. Croplands and pastures must be managed in ways that enhance habitats and the delivery of ecosystem services. And wildlife habitat needs to be managed in ways that benefit local farmers, pastoralists and other local people.

These are some examples for such 'ecoagriculture' strategies:

■ Community Water Harvesting, Rajasthan, India:
Drought and environmental degradation threatened livelihoods in Rajasthan's Arvari Basin. Crop failure, soil erosion and watershed degradation were widespread and communities faced continual challenges to meet their water needs. Over the last twenty years a community-led watershed restoration programme has centred on re-instating johads – an indigenous technology that collects water from uphill tributaries: more than 5,000 of them now serve around 1,050 villages. Water supplies for irrigation, wildlife, livestock and domestic use have increased, and groundwater re-charge is encouraged to improve hillside forest productivity. Village councils coordinate community leadership. The social, economic, and biophysical landscape has been transformed. Restoring river flow has increased the availability of water, improved the sustainability of agriculture and the security of livelihoods, and strengthened the emphasis on community-led natural resources management.

■ Integrated Pastoral Management, Kenya:
The Pastoralist Integrated Support Programme in Kenya's remote and arid Marsabit region works with over 11,000 pastoral people to protect dryland biodiversity from over-grazing through managing herd movements strategically around vulnerable water points. Restoring highly flexible, traditional water management systems has significantly reduced the vulnerability of nomadic communities.

■ Farming to Mimic Natural Ecosystems, Spain:
'Dehesas' have evolved to sustain livestock and grain production in areas of limited rainfall over nearly 3.5 million hectares of southern Spain and Portugal. These are human-engineered ecosystems, designed and managed over centuries to mimic natural savanna, and support high levels of biodiversity. Scattered trees, shrubbery, and diverse cultivation and livestock systems increase the heterogeneity of the habitat. Pastures and grainfields benefit from improved soil structure and rainfall absorption, and from reduced evaporation underneath the trees. ▶

These case studies are just snap-shots of the diverse array of innovative strategies that have evolved in drylands to coordinate managing wildlife habitat and watersheds management with conserving the genetic diversity of crops and livestock in ecologically-compatible production systems. Building on existing 'place-based knowledge' and landscape management expertise is essential. Investments should be increasingly targeted to directly support such community-driven ecoagriculture approaches, including traditional and indigenous practices. Community-based leaders have often proved to be highly effective 'extension agents', yet rarely play a central role in designing and implementing such initiatives or support services.

Local enterprise

Further incentives are needed to foster collective action between the diverse stakeholders responsible for managing dryland landscapes – including farmers, pastoralists, community-based organizations, NGOs involved in conservation, agriculture and rural development, research institutions, the food industry, and policymakers. Institutions and processes are required to strengthen collaboration and integrated thinking amongst them.

Such processes have demonstrated opportunities to facilitate broader participation in decision making and in negotiating management agreements that reconcile ecosystems, livelihoods and productivity goals. Their effectiveness could be enhanced by further investment in developing cross-sectoral institutions that support stakeholders in managing landscapes – for instance by providing integrated support services for agricultural production, conservation, local enterprise development, and landscape planning. There are, for example, almost no institutions equipped to support and enable the management of transboundary Protected Areas, watersheds and other shared landscapes and ecosystems.

Where these lessons are applied, there is great scope for achieving significant gains for both rural livelihoods and biodiversity conservation. Unfortunately opportunities for drawing on the depth and diversity of 'place-based' local knowledge to support integrated landscape management approaches, are lost within national and international development strategies. Agriculture and biodiversity typically remain sectorally based, with no coordination between institutions responsible for different elements of the same landscape. Environment ministries tend to remain distinct from agriculture, water, fisheries, and forestry ones. Agricultural systems are rarely the focus of conservation research, or vice versa. Market mechanisms rarely recognise the role of farmers and pastoralists as stewards for conservation.

Enhanced coordination

Narrow sectoral strategies have failed in the drylands. Synergies can be delivered by enhancing coordination and complementarity between existing conservation and production strategies. Diverse stakeholders need to be collectively engaged in designing and delivering strategies that simultaneously address the challenges of meeting goals for rural livelihoods, food security and environmental sustainability. An increasing number of international dryland initiatives are being established to do this, including greater investment in integrated research on drought, poverty and agriculture; in dryland biodiversity conservation and ecosystem management; and in enhancing the understanding of the role of traditional indigenous knowledge.

Nonetheless, the scale and extent of this integration is not enough to achieve the MDGs. The key challenge is to catalyse the processes, investment and incentives necessary to moblise existing knowledge and strengthen coordination.

Thus, in this International Year of Deserts and Desertification, the international community should pursue three priority investments to promote integrated strategies for meeting the MDGs in rural drylands:

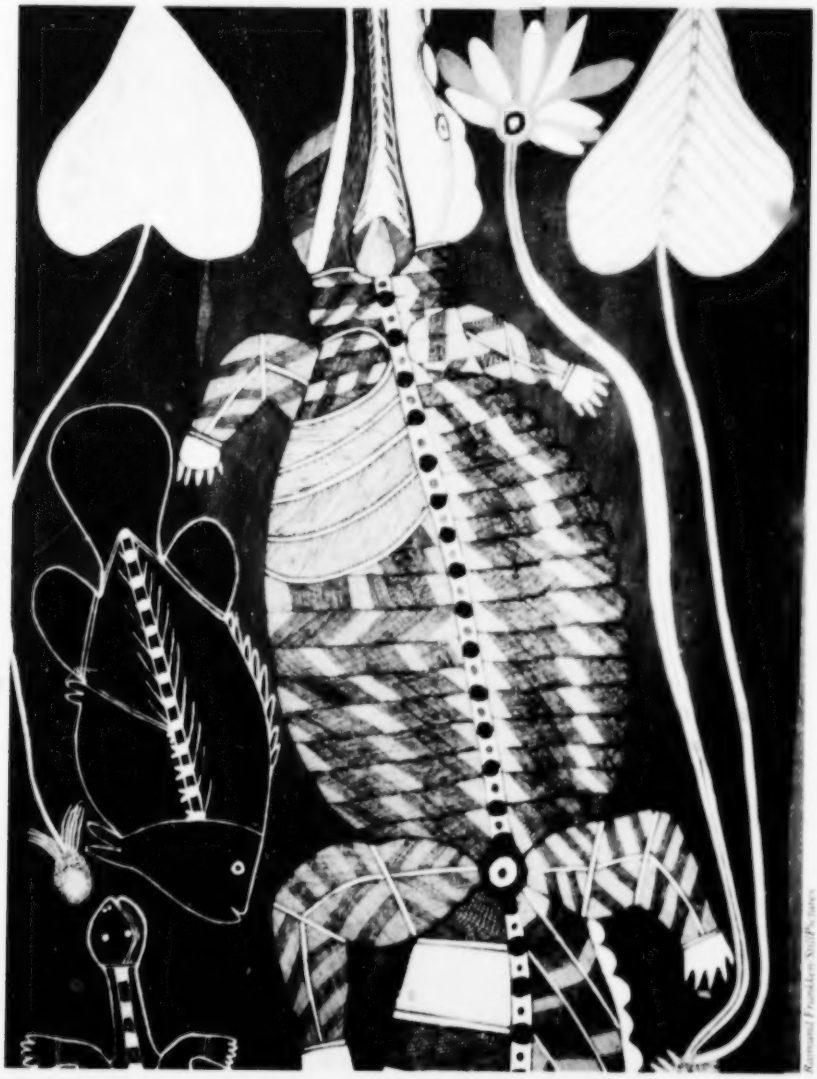
- Coordinating the agendas of the Convention on Biological Diversity and the Convention to Combat Desertification energetically to pursue landscape-scale strategies in drylands that achieve ambitious objectives both for enhancing sustainable agricultural production and for conserving biodiversity and ecosystems, through multi-stakeholder planning and action.
- Supporting this strategy of integrated landscape management with a focused programme of research, knowledge exchange and capacity-building across communities and sectors, building upon the existing expertise and knowledge of community-based practitioners
- Empowering dryland resource managers – farmers, pastoralists and others – to play a central role designing investment and conservation programmes, and to participate as key actors in national and international policy processes ■

Sara J. Scherr is President at Ecoagriculture Partners. Claire Rhodes is Programme Associate at the same.

Dry Knowledge

Lively Enterprise

MARK STAFFORD SMITH says that deserts abound in innovation and opportunities and describes ways in which they are being harnessed and met in the world's driest continent



About one third of the Earth's land surface supports a sixth of its population, a population often disempowered and remotely governed, which was once self-sustaining but is now suffering from desertification. It is easy to focus on the problems of these regions, and they are indeed manifold. Nevertheless, these are also environments of great energy, inventiveness and opportunity.

It is time that we put a realistic but positive flavour into talking about living in the world's deserts. The International Year of Deserts and Desertification offers a chance to move away from the disempowering language of catastrophe embodied in the term 'desertification' – language that risks institutionalising desert people as perpetual victims, recipients of welfare or aid.

Desert regions around the world share a unique combination of features. They face variable and unpredictable biophysical, political and market environments outside local control. They are governed by remote centres of power and are a long way from markets. Their resources are generally limited. They often have local (rich patches) such as mineral wealth. And their small populations are dispersed and relatively mobile.

Desert living certainly means coping with slender resources, enormous variability, climatic extremes, and daunting physical challenges. But these same forces drive innovation and create immense opportunities: It is no coincidence that key social changes have emerged from deserts over the centuries.

In the face of adversity, desert people have always innovated and they still do. There is an immense diversity of novel and creative energy in desert regions around the world, but they face the perennial problem of a lack of critical mass. Their populations are often too small to influence policy created in distant cities or markets played out on the world stage. Desert issues are perceived as too secondary to attract coordinated, large-scale research efforts.

Similarly, the hundreds of small-scale innovations created every year in deserts are each individually too small to create a major new industry. They must be drawn together and branded as a single product of desert regions: Desert Knowledge, or the understanding of how to live well – sustainably, economically and harmoniously – in the desert. The world's driest continent is using this idea to seek solutions to the challenges of desert living.

Business partners

In a ground-breaking partnership, for example, desert indigenous communities are working with researchers from Australia's Desert Knowledge Cooperative Research Centre (CRC) to preserve and protect their knowledge about the healing properties of their traditional plant medicines. Laboratory ▶

tests have already revealed bioactive substances in them.

Meanwhile, the food industry is forming business partnerships with indigenous Australian food networks to develop such traditional staples as acacia seeds and bush tomatoes. The growing native foods industry is already diverse, ranging from wild harvesting of plants by indigenous communities in the central deserts, through cottage-industry horticultural production and processing, to large-scale horticulture and harvest trials. The Desert Knowledge CRC contributes research solutions, such as better pest control and propagation technologies for the most popular desert foods.

To take another example, the 'kangaroohopmobile' – which bounces calls from one handset to another to form a virtual network, avoiding the need for building infrastructure – could be a boon in isolated areas worldwide. Each mobile handset serves as a carrier in an ever-moving network which has only a few fixed transmission points. As the range of each user is limited it may take a few hops, from one user to another, for a call to reach its intended recipient. Clever software manages the calls and picks the best route – or set of hops – without phone users even being aware of it. All they have to do is leave their mobile handsets switched on.

Cultural change

Desert regions throughout the world are struggling with the effect of globalisation and cultural change. Australia's outback communities are responding to these challenges by exploring new systems for self governance, for social and economic renewal, for preserving the world's most ancient cultures, traditions and landscapes, and for engaging with the national and global economies.

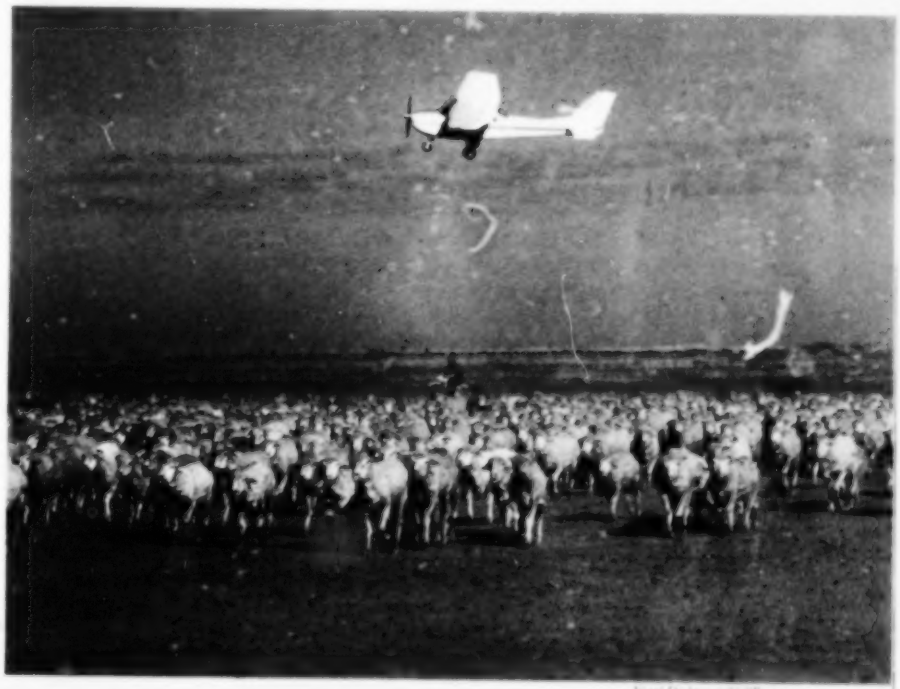
Hundreds of Australian desert businesses have formed a continent-wide network by using the latest communications technology. They have shared ideas and expertise and are forging new export partnerships over thousands of kilometres in industries such as mining services, tourism, food, and sustainable construction, helping to overcome the problem of gaining critical mass. An arid town alliance spanning four Australian states now allows small mining services enterprises to bid collaboratively for contracts that would be out of the reach of individual members. After just a year, members are reporting real improvements to their bottom lines. Such cooperative business developments fuel economic growth by helping companies to overcome distance, isolation, scale, and limited access to markets.

Indigenous Australians, pioneers of desert living, are emerging as leaders for the 21st century, renewing humanity's thinking about how it can live successfully with limited resources. Their holistic approach – like that of indigenous peoples elsewhere – are teaching us to think across territorial boundaries and sectors. They also demonstrate the need to integrate divergent disciplines rather than to see desertification purely through the single lenses of social science, climate change, or soil erosion. In reality, human and environmental factors are almost always intertwined. The challenges facing deserts are multi-scaled, multi-sectoral and scientifically multi-disciplinary, and affect a wide range of people and interests. These are sophisticated issues that demand sophisticated responses.

Synthesizing traditional Aboriginal knowledge and Western science into a new 'Science of Desert Living' in Australia promises an integrated theoretical response to desertification. It focuses on the outcomes of applied research to shape understanding of how to live and create wealth sustainably and harmoniously in deserts. And it recognises that people are not going to tackle long-term desertification unless their circumstances rise above subsistence living.

The Desert Knowledge movement aims to create sustainable livelihoods for desert people, to make remote desert settlements more viable, to develop thriving desert regional economies and to increase the social and human capital of desert people. It is helping to build a network of desert knowledge economies which sustain our inland environments and avoid future desertification.

In the Year of Deserts and Desertification, the UN is promoting the message that "desertification is a major threat to humanity, compounded by both climate change and loss of biological diversity." For the people of the Australian inland – and those of deserts worldwide – it provides an opportunity to show how to build a more prosperous, sustainable and secure world, by doing something they are good at: living in deserts, and living in them well ■



Nigel Dickinson/AllPictures

Mark Stafford Smith is a research fellow with the Desert Knowledge Cooperative Research Centre, Alice Springs Australia.

Cutting Through *Confusion*

JAMES REYNOLDS outlines a new paradigm for understanding the interrelated factors that make up desertification, so as better to combat it

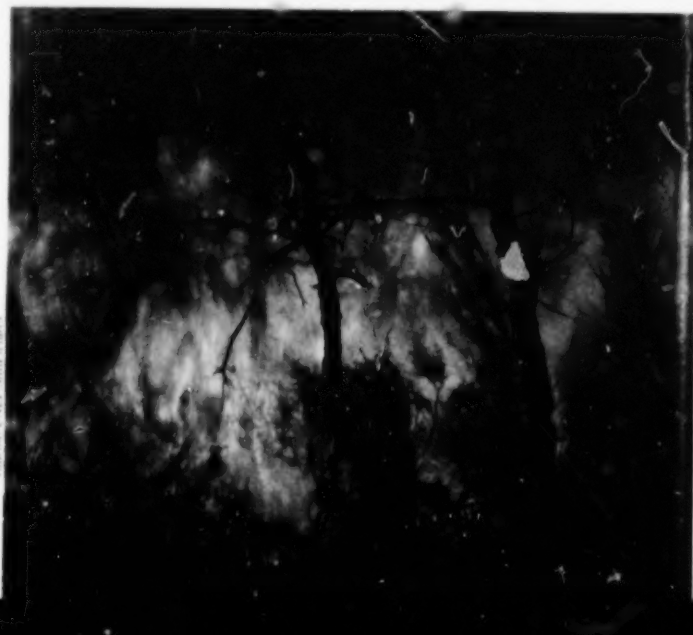
Desertification is a very contentious topic, as well as a very important one. It evokes much disagreement and controversy. Issues surrounding the causes of land degradation and its consequences – and political responses to it – remain largely unresolved. They include, for example, the extent to which land changes are 'natural' (such as those driven by the climate) or anthropogenic (as through overgrazing); whether or not desertification is reversible; how to determine the amount of land affected, or at risk; and the role of abatement efforts aimed at social and institutional issues as opposed to scientific and technological ones.

There are at least four reasons for this confusion. First, there is no standardized meaning for land 'degradation' that fits all situations. Yet, nevertheless, up to 70 per cent of all drylands are routinely reported as 'desertified'. Second, land degradation is often triggered or exacerbated by climate variability, mainly drought, so that its causes are not necessarily anthropogenic. Third, not all changes have a direct, immediate effect on human welfare – and farmers are generally only prepared to accept that they may need to change their practices if land degradation is a direct consequence of their activities and/or it directly affects them or other members of society. And fourth, any elaboration of what constitutes land degradation must make it clear that while biophysical components of ecosystems – such as soil erosion, and the loss of grass cover – are involved, interpreting such changes as 'losses' depends on integrating these components in the context of people's socio-economic activities, often through using the term 'productivity'. Failure to recognize and include these interdependencies in decision-making has slowed progress in desertification research. Desertification is a complex topic, not amenable to simple solutions or answers.

Global change

Simultaneously assessing biophysical components (such as soil nutrients and erosion, and grass versus shrub cover) and socio-economic ones (such as household income, family size, and debt) is one of the most challenging, but potentially rewarding, topics in desertification research. A international effort, recently initiated as part of the Global Land Project of the International Geosphere-Biosphere Programme, has brought together researchers from global change programmes, representing both natural and human-influenced systems. The product of these new ideas is the Dahlem Desertification Paradigm (DDP), a series of assertions that emphasize key linkages between socio-economic and biophysical systems at different scales of time and space. Its constituent ideas contained within the DDP themselves are generally not new, but – as is the way with paradigms – bring together much of the previous work on the topic in a way that reveals new insights. Its main points are:

- An integrated approach that simultaneously considers biophysical and socio-economic attributes is absolutely essential. It is not possible, for example, to quantify the extent of desertification based solely on satellite images (recording such biophysical properties as changes in land cover) – or based solely on poverty (monitoring such socio-economic properties as changes in the local wealth of families). Elements of both are necessary.
- Selecting biophysical and socio-economic attributes must focus on 'slow' variables – such as the genetic ▶



makeup of cattle herds, soil fertility and capital wealth. They evolve and change slowly, but are the crucial determinants of sustainable livelihoods. 'Fast' variables on which people depend in their day-to-day lives – such as grain yield, food reserves and interest rates – are very real issues for short-term humanitarian aid, but tend to confuse the strategic debate about desertification. Efforts to map and respond to land degradation affecting ecosystems goods and services are perpetually distracted by the immediate effects of short-term phenomena – like drought, shortages in household income and deaths of livestock – on these fast variables; but these simply reflect weather-driven noise. In reality, drought kills families who live on degraded landscapes with no social or economic stored capital: it may hardly be noticed by rich farming families who possess healthy pastures.

- The coupled biophysical and socio-economic systems of the world's drylands are not static: they are produced by a set of complex interactions between biophysical, social and economic factors. So their behaviour is emergent rather than predetermined, can rarely if ever be reversed to some exact prior state, and has a changing – and often unpredictable – path.
- The cost of restoring degraded socio-ecological drylands systems to make them productive and sustainable grows with increasing degradation. This growth may be steady or sudden, but once a threshold of degradation is crossed, the costs of recovery increase in a non-linear way. Case studies show that, once this happens, it is necessary to call on resources from a higher (e.g. provincial, state or international) or broader (e.g. other households or communities) scale in order to reverse the change.
- Both the social and ecological systems of the world's drylands are hierarchical. Hence there are always concens about scale. Desertification, as it affects both the land and people, is the regional expression of much local degradation. The word 'desertification', when used in the halls of the United Nations, usually has a different meaning than when it is used in at national, provincial and local levels.
- While change is inevitable, there does exist a constrained set of ways in which coupled socio-ecological dryland systems function, and this can allow us to understand and manage them. We do not need to understand everything but we must be able to distinguish what is understandable or predictable (even if uncertain) from that which is inherently unpredictable.

Conceptual holisim

The strength of the Dahlem Desertification Paradigm is in its cross-scale conceptual holism. While using the term 'desertification' is only really useful where large areas are seriously affected – with 'degradation' more appropriate for more local, and less severe, instances – the DDP framework embraces all levels of concern. At the international level, for example, implementing the Convention to Combat Desertification (UNCCD) must be framed in terms of changes in human-environment systems that matter to people. This dramatically changes the meaning of the 'extent of desertification', and both the timing and distribution of funding for intervention. Similarly, at the household or community level – where the concern is the specific type of land degradation taking place, and its local socio-economic consequences – the DDP channels resources towards identifying the essential biophysical and socio-economic slow variables that really matter in quantifying current and future risk.

The DDP framework is unique in two ways. It attempts to capture the multitude of interrelationships within human-environment systems that cause desertification, within a single, synthetic framework. And it can be tested, ensuring that it can be revised and improved upon.

The Assessment, Research, and Integration of Desertification research network (ARIDnet) has been formed to test the DDP, and has been operating in Latin America for the past two years. Details of two case studies, in Mexico and Honduras, can be seen at http://www.biology.duke.edu/aridnet . There are plans to expand the network to other regions.

We hope that, as case studies are conducted around the globe, the Dahlem Desertification Paradigm framework will help focus the attention of those concerned with implementing the UNCCD: to recognize, for example, that desertification cannot be framed in terms of biophysical nor socio-economic measures alone, let alone in terms of any single measure; that the task of quantifying 'desertification' is not hopeless; that at a high hierarchical scale there are a restricted number of syndromes of desertification, which define a limited number of critical slow variables, differing among systems in non-trivial but manageable ways; and, importantly, that elucidating the crucial socio-economic and biophysical slow variables will require the cooperation of multidisciplinary research teams ■

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Mark Edwards/StillPictures

Thomas Lane/UNEP/StillPictures

Greening Desert

NADIA EL-AWADY, in a personal account, reports on a pioneering programme to turn desert into productive agricultural land

Gibreel Abdel-Fattah has lived in Garf Hussein on Lake Nasser for 16 years. Four of his six children were born here. The small mud-brick house he built with his own hands looks out onto a picture-postcard perfect view of palm trees on calm blue waters.

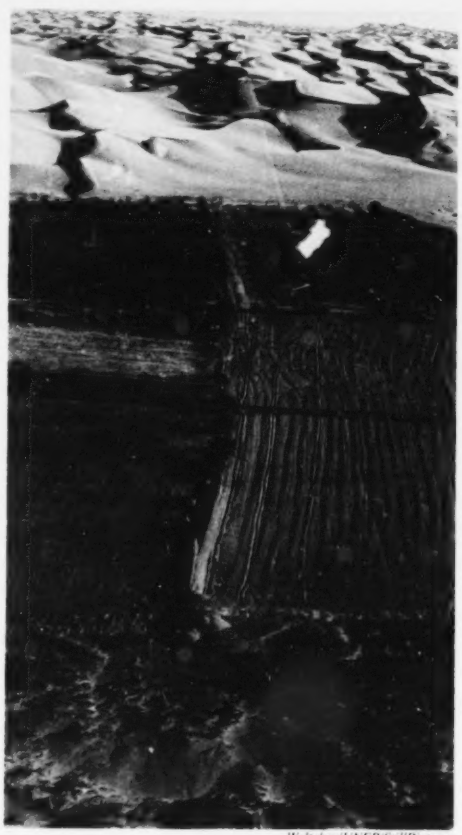
Despite the view, Gibreel's life on these shores has been difficult. His only water source is a pump near his house that lifts water directly from the lake. His children's one-room school is a three kilometer walk away and provides only primary education, so his two eldest children were sent to live with their grandparents in the city of Esna, about 290 km away. His wife depends on traditional forms of medicine or must find transport to get modern care in Aswan, 140 km distant.

Neverthless, he has little to complain about. He is proud of his land, which produces berseem, tomatoes, aubergines, and onions. He raises cattle, and boasts that he owns one of the most fertile bulls in the area.

Desolate land

In Egypt's deep south, along the shores of the country's largest strategic water reserve, ambitious efforts are under way to green the desert. The government plans to resettle one million people around Lake Nasser by 2017. Small agricultural communities have already started sprouting up in this desolate land, but lack of basic amenities has so far been a hindering factor in this project realizing its true potential. Yet even in the face of enduring hardship, these settlers from all over the country are determined to make a future for themselves and for their families.

Lake Nasser, formed behind the Aswan High Dam across the Nile, is – at 550 km long and 35 km at its widest point – one of the world's largest artificial lakes. In 1974, the Egyptian government formed the General Authority for the Development of Lake Nasser (GADLN). "GADLN was established in order to conduct research and to determine what the various natural resources of the Lake Nasser region are," explained Dr. Hani Sabry, head of its central administration for agricultural development. "It is also responsible for establishing a plan of action for the proper management and utilization of these resources."



Woltchev/UNEP/StillPictures

The lake holds Egypt's strategic water supply – with a storage capacity of some 157 km3 of water – and supplies 40 per cent of the country's fish. The surrounding region is rich in granite and marble, and has good tourism potential. But most importantly, GADLN – together with the governorate of Aswan and such organizations as the World Food Programme (WFP) – is resettling Egyptians in the area to benefit from its high agricultural potential.

Selection criteria

The scheme has not been without difficulties. So ambitious have been the efforts that hundreds of people have been assigned lands before the infrastructure has been provided to support them. Depending on the phase of land handover and on the authority responsible for a particular area, selection criteria can form a heavy burden on applicants. Some lands are only assigned to farmers if they commit to settling on them with their wife and children, even though such basic needs as water, sanitation, schooling and health-care are at a bare minimum. Semi-regular inspections are made by the authorities to make sure that the families remain on the land: farmers who are discovered to have sent their wives and children back to their hometowns are subject to possible expulsion.

Nevertheless, Egyptians are determined to succeed in making the best of a difficult situation. Community development projects are being established to help the settlers help themselves. One such is being spearheaded by the Near East Foundation's (NEF) regional office in Egypt. Funded by the International Development Research Center (IDRC), it aims at conducting what it calls participatory community-based research. By involving both the settlers and the main stakeholders in the region, NEF is establishing a problem-solving framework that can continue even after the project is completed. Another main concern is exploring agro-ecology and eco-health to improve livelihoods and ▶

protect the lake's ecosystem from potential pollutants.

The use of chemical pesticides and fertilizers in the Lake Nasser region is prohibited by the Egyptian government, but they have been used nonetheless. The NEF project has attempted to establish transparency with GADLN about their use, and to work together to teach farmers how to use safer ones and to obtain and use organic pesticides and fertilizers.

Dr. Lamia El-Fattal, IDRC programme officer, explained that the project "anticipates an outcome and chooses to deal with it before it happens". There are concerns that resettling one million people in the region could have a negative impact not just there but on the entire Nile valley. The project therefore aims, she said "to ensure that there is minimum damage to the environment through pollution and resource degradation by encouraging good practices of farmers using agro-ecological production techniques to minimize impact". She hopes it will create "champions of the environment" among the settlers to "influence the people that would be moving into the new settlements once they are created".

Environment champions

In Garf Hussein, 'Am ("Uncle") Barsi, – as he is called by those that know him – is one such champion. A strong advocate of the project, he has been one of many farmers who have attended NEF meetings aiming at identifying and prioritizing the problems facing the settlers .

He has participated in seminars given by agricultural specialists on the best types of crops to grow in the harsh climate of southern Egypt, and visited with farmers in neighbouring communities to learn how they succeeded in exporting their produce to Europe. He also attended a meeting organized by NEF with local traders to discuss the possibilities of providing organic pesticides and fertilizers to Lake Nasser's farmers.

Standing barefoot in his land 67-year-old 'Am Barsi proudly showed me his crop of tomatoes grown from hybrid seedlings designed to resist heat that can reach 55°C. Although more expensive than the local variety most commonly grown in other parts of Egypt, these tomato plants produce at least twice as many tomatoes.

His neighbour – 'Am Salah, recognizing the agricultural engineer who was accompanying me – called out for advice on his sickly aubergine plants. The group walked over. "This is where your role comes in, 'Am Barsi," said Ehab Ezzeldin, NEF project coordinator. "Explain to 'Am Salah what the problem is," he said. 'Am Barsi examined the plants that had turned a sandy yellow colour, diagnosed the disease and prescribed the proper treatment. Ezzeldin beamed with pride. "This is why we're here," he said.

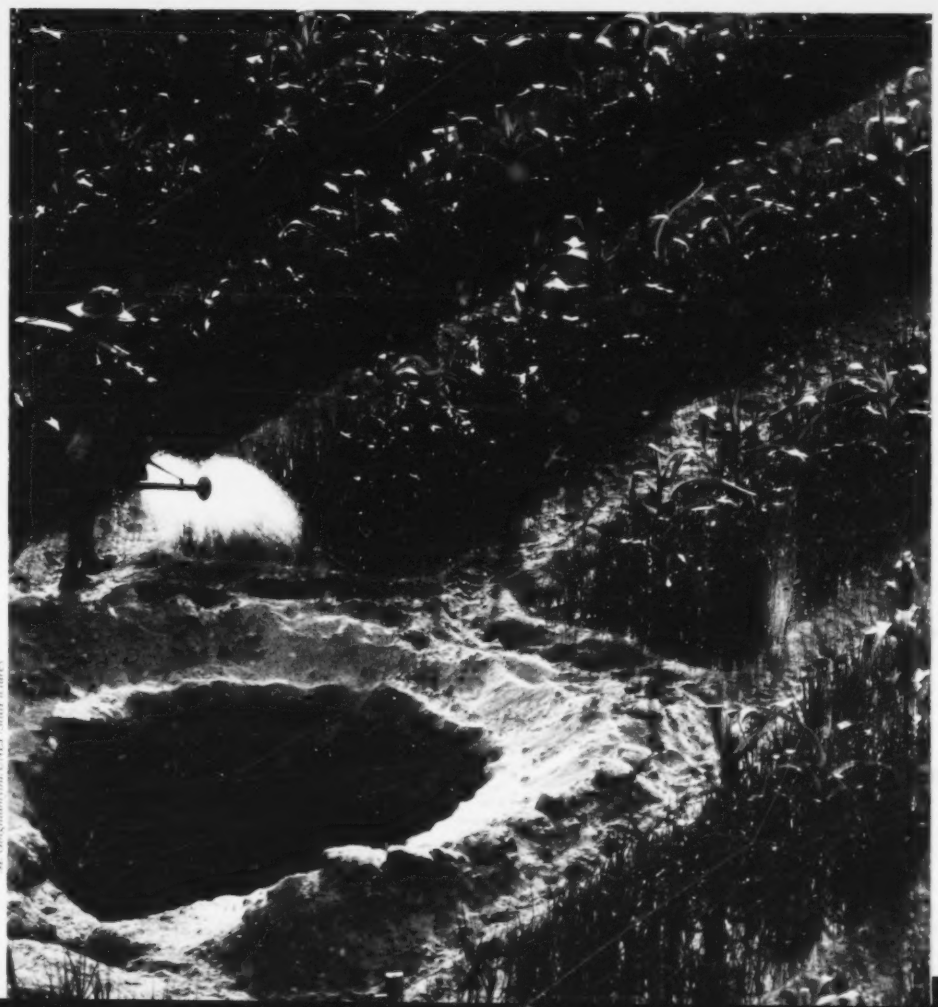
El-Fattal shares his optimism. She hopes that this project will be able to feed information to the Egyptian government for better policy-making when settling people in other new lands.

Thus where arid desert meets water, enduring hardship meets hope. And the likes of Gibreel, Barsi, and Salah will give root to communities that can hopefully perpetuate sustainable agricultural practices for generations to come ■

Nadia el Awady is is the managing science editor of IslamOnline.net and the president of the Arab Association of Science Journalists.

A major multi-million pound initiative by the High Dam Lake Development Project under the Ministry of Agriculture is currently setting up model villages: one – Bashayer El Kheir – is virtually inside the Garf Hussein area. The village is constructed on a food-for-work basis with assistance from WFP and includes excellent beneficiary housing; a well equipped school (pre-school, primary and preparatory stages); permanent irrigation to enable year-round instead of seasonal cultivation; and a well-equipped health unit with an ambulance. Bashayer El Kheir is the only operational village to date, but two others are under construction in Thomas & Afia and in Kalabsha. The project plans to expand with construction of five model villages around the Lake, and these are intended to act as nuclei to be expanded according to the same plan.

Ayoul E-Aljaloudi, Deputy Director of WFP's Egypt Office.



M. Gaughan/UNEP Still Pictures

Art for the Environment

The end of Klaus Toepfer's eight-year tenure as UNEP's Executive Director was marked by the launch of a new initiative on art and the environment. The first exhibition in the initiative – for which the Natural World Museum (NWM) has joined forces with UNEP – was opened at United Nations Headquarters in Nairobi as part of his farewell reception on 31 March.

One spectacular work, Trapped Inside, was installed in the grounds in Gigiri, on the outskirts of the Kenyan capital, in dedication to Mr Toepfer, as a tribute for his years of service to UNEP and in gratitude for his efforts towards using art to educate the public about the global environment.

By French artist J. C. Didier, it features a living tree on life support. The African Greenheart (*Warburgia Ugandensis*) was selected because it is indigenous to East Africa and is also used for traditional medicine.

"Trapped Inside symbolises both destruction and regeneration", said Mr Didier. "It gives us a glimpse of the future and puts us in close relationship to a nature in jeopardy and nature at a crossroads."

Another work, Booked Out by Samuel Fleiner of Germany, is an installation of recycled United Nations books and papers. He also presents RE-ART ONe, the first international art collection that focuses exclusively on art and design made from recycled waste materials. It includes 128 works by 51 artists, designers, and craftsmen from 15 countries, made from such materials as aluminium cans, scrap metal and paper or plastic waste.

"Sustainability is at the heart of my projects", says Mr Fleiner. "I organize events that involve people in new environmental thinking, taking raw material that has already 'lived' and, through art, is recycled into a positive medium."

The exhibition also includes Arbres Brûlés, an installation of 45 burnt trees turned into sculpture by Philippe Pastor, an artist based in Monaco. The sculptures were created from the calcified trunks of trees in the forest of Garde Freinet in Var, southern France, which were devastated in the summer of 2003 by a forest fire started by arson. Through the work, the artist expresses his anger at the wanton destruction and sets out to sensitize the world to the damage caused by forest fires and the need to preserve natural resources.

"Art is the cornerstone of conservation and the emblem of civilization", said Mia Hanak, Executive Director of NWM, adding that its exhibits "are exciting in what they showcase, but are also important as a focal point where the public can interact and be part of an environmental community."

NWM's next exhibition will be housed at City Hall, in San Francisco, California to mark World Environment Day in June. It will also produce an environmental art exhibit as part of the celebrations of the Day, which will be hosted in Algiers, Algeria ■

UNEP

Achim Steiner

New Executive Director

Achim Steiner – the Director General of IUCN-The World Conservation Union – has been unanimously elected to be UNEP's fifth Executive Director by the UN General Assembly. He succeeds Klaus Toepfer, who has stepped down after completing two four-year terms in the post.

Mr Toepfer welcomed Mr Steiner – who was recommended to the General Assembly from a short list of five by UN Secretary-General Kofi Annan – as "an outstanding individual among a field of outstanding candidates."

He added: "I am convinced that choosing Achim Steiner will prove to be a great decision, bringing youth, dynamism, intellect, and a deeply held commitment to environment and sustainable development issues. His breadth of experience with intergovernmental negotiations, civil society, scientists, and private business will build on UNEP's evolving networks with and beyond governments."

Mr Steiner, who will start his term of office on 15 June 2006, has led the 1,000-strong staff of The World Conservation Union, since 2001. The world's largest environment network, it has over a thousand members – including states, government agencies, and non-governmental organizations – in 140 countries.

A German national, born in 1961 in Brazil – where he lived for ten years – he holds a BA from Oxford University and an MA from the University of London, with specialisation in development economics, regional planning, and international and development policy. He also studied at the German Development Institute in Berlin and at the Harvard Business School.

He has since worked both at grassroots level and at the highest levels of international policy-making to address the interface between environmental sustainability, social equity and economic development.

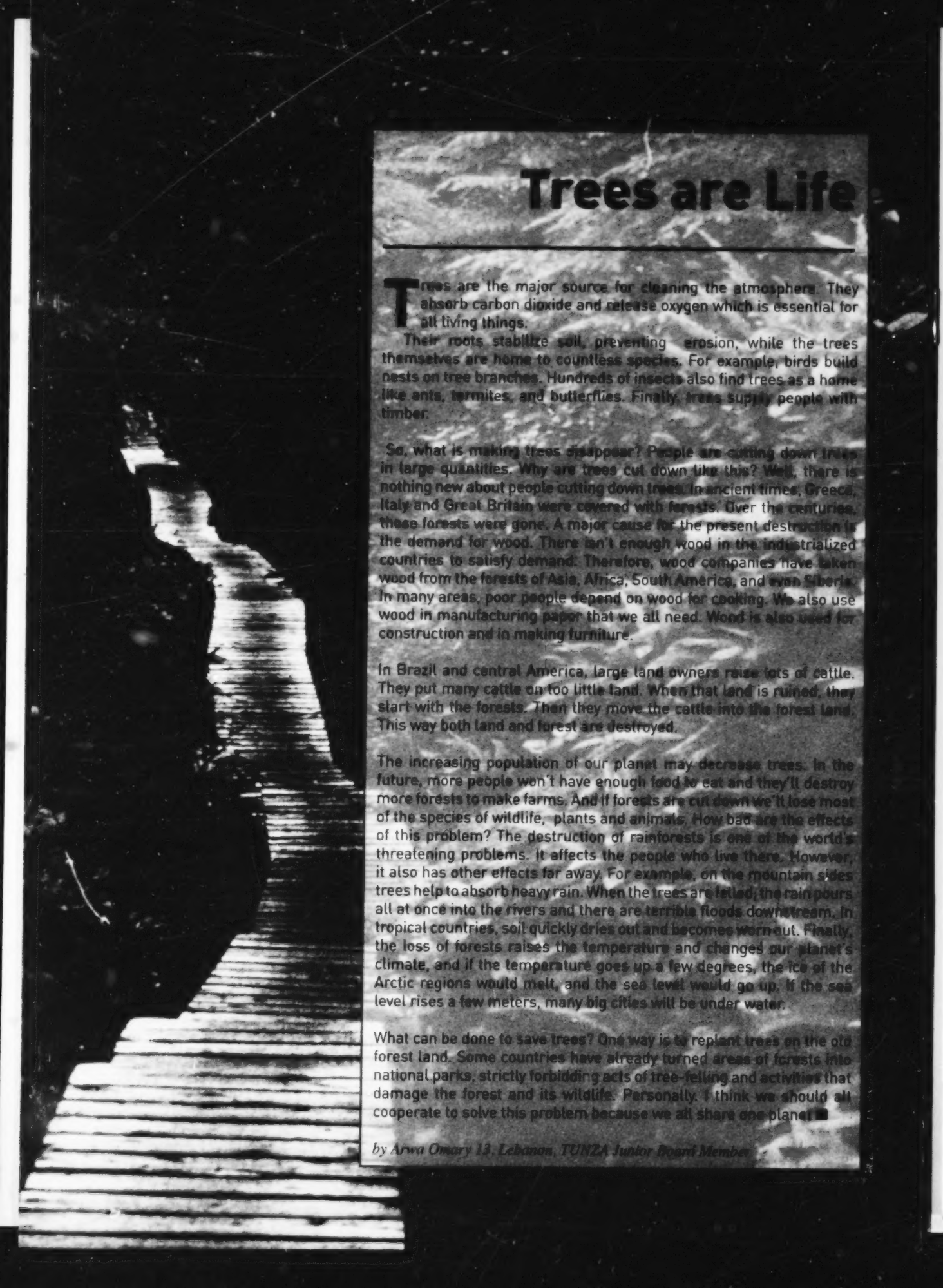
His career has included working with a community-based organization in India; advisory positions on sustainable development with NGOs, public sector and international organizations in Pakistan, Germany, the USA, and Vietnam; and short-term assignments in Africa, Asia, the Middle East, and the South Pacific. He managed a regional conservation programme for IUCN in Southern Africa and, as Senior Policy Adviser of its Global Policy Unit, led the development of new partnerships between the environmental community and the World Bank and United Nations system.

He worked as Chief Technical Advisor on a programme for sustainable management of Mekong River watersheds and community-based natural resources management. In 1998 he was appointed Secretary General of the World Commission on Dams, based in South Africa, managing a global programme of work to bring together the public sector, civil society and the private sector in a global policy process on dams and development.

Mr Toepfer, whose tenure as Executive Director of UNEP concluded on 31 March, presided over a period of UNEP's history that has seen environmental sustainability become front page news and central to international development goals. Among the milestones of his tenure were important environmental agreements, including the Cartagena Protocol on Biosafety – which addresses issues of genetically modified organisms – and the Stockholm Convention on Persistent Organic Pollutants. He was also closely involved in behind-the-scenes negotiations in support of the Kyoto Protocol on climate change.

His term also saw the establishment of the annual Global Ministerial Environment Forum, tasked by the General Assembly with reviewing important and emerging environmental issues. And it witnessed increasing importance given to the area by the international community: environmental sustainability is enshrined as an explicit objective of Millennium Development Goal 7, and as a thread that runs through all the rest of them.

In welcoming his successor Mr Toepfer emphasised UNEP's "key role in promoting sustainable development, fighting poverty, realising social justice and achieving stability in the 21st century." ■



Trees are Life

Trees are the major source for cleaning the atmosphere. They absorb carbon dioxide and release oxygen which is essential for all living things.

Their roots stabilize soil, preventing erosion, while the trees themselves are home to countless species. For example, birds build nests on tree branches. Hundreds of insects also find trees as a home like ants, termites, and butterflies. Finally, trees supply people with timber.

So, what is making trees disappear? People are cutting down trees in large quantities. Why are trees cut down like this? Well, there is nothing new about people cutting down trees. In ancient times, Greece, Italy and Great Britain were covered with forests. Over the centuries, those forests were gone. A major cause for the present destruction is the demand for wood. There isn't enough wood in the industrialized countries to satisfy demand. Therefore, wood companies have taken wood from the forests of Asia, Africa, South America, and even Siberia. In many areas, poor people depend on wood for cooking. We also use wood in manufacturing paper that we all need. Wood is also used for construction and in making furniture.

In Brazil and central America, large land owners raise lots of cattle. They put many cattle on too little land. When that land is ruined, they start with the forests. Then they move the cattle into the forest land. This way both land and forest are destroyed.

The increasing population of our planet may decrease trees. In the future, more people won't have enough food to eat and they'll destroy more forests to make farms. And if forests are cut down we'll lose most of the species of wildlife, plants and animals. How bad are the effects of this problem? The destruction of rainforests is one of the world's threatening problems. It affects the people who live there. However, it also has other effects far away. For example, on the mountain sides trees help to absorb heavy rain. When the trees are felled, the rain pours all at once into the rivers and there are terrible floods downstream. In tropical countries, soil quickly dries out and becomes worn out. Finally, the loss of forests raises the temperature and changes our planet's climate, and if the temperature goes up a few degrees, the ice of the Arctic regions would melt, and the sea level would go up. If the sea level rises a few meters, many big cities will be under water.

What can be done to save trees? One way is to replant trees on the old forest land. Some countries have already turned areas of forests into national parks, strictly forbidding acts of tree-felling and activities that damage the forest and its wildlife. Personally, I think we should all cooperate to solve this problem because we all share one planet ■

by Arwa Omary 13, Lebanon, TUNZA Junior Board Member